Index

IEE Proceedings Part H
Microwaves, Antennas and Propagation
Vol. 133, 1986

ABBREVIATIONS

- p paper, address or lecture
- d discussion on a paper
- a abstract of paper or address
- e errata
- s synopsis of a paper published in full in another Part of the IEE Proceesings

Author index

A

Adeniran, S.A. A new technique for absolute temperature compensation of tunable resonant cavities e18
Ajose, S.O. Design formulas for impedance matching using a hermite line p319
Alanen, E., Lindell, I.V., and Hujanen, A.T. Exact image method for field calculation in horizontally layered medium above a conducting ground plane p297
Ando, M., Kondo, A., and Kagoshima, K. Scattering of an arbitrary wave by a thin strip grating reflector p203
Andrasic, G., James, J.R., and Hall, C.M. see James, J.R.
Anvari, K., and Baden Fuller, A.J. Computer-aided design of microwave amplifiers by the random addition of new components p395
Arndt, F., Bornemann, J., Heckmann, D., Piontek, C., Semmerow, H., and Schueler, H. Modal S-matrix method for the optimum design of inductively direct-coupled cavity filters p341
Arndt, F., Heckmann, D., Semmerow, H., Bornemann, J., and Vahldieck, R. Stopband optimised *E*-plane filters with multiple metal inserts of variable number per coupling element p169
Arndt, F., and Bornemann, J. see Bornemann, J.
Arvas, E., Rao, S.M., and Sarkar, T.K. E-field solution of TM-scattering from multiple perfectly conducting and lossy dielectric cylinders of arbitrary cross-section p115

B

Bach, H., and Viskum, H. Comparison of three cross-polarisation prediction methods for reflector antennas p325
Baden Fuller, A.J. Computer optimisation of circuits applied to the modelling of microwave IC passive components p411
Baden Fuller, A.J., and Anvari, K. see Anvari, K.
Baribaud, M., Caerou, J.C., and Kamarei, M. Phase computer at 2.5 GHz p183
Barry, D.M., McKenzie, W., Snowden, C.M., and Howes, M.J. see McKenzie, W.
Bashir, S.O., and McEwan, N.J. Microwave propagation in dust storms: a review p241
Beeckman, P.A. New method to evaluate the Fourier transform of a two-dimensional window function with piecewise continuous boundaries. Application in antenna theory p291
Beeckman, P.A. Prediction of the Fresnel region field of a compact antenna test range with serrated edges p108
Bennett, J.C., and Farhat, K.S. see Farhat, K.S.
Benson, F.A., Marincic, A., and Tealby, J.M. see Marincic, A.
Bond, K., and Shelley, M.W. Dual frequency antenna integration using invisible grating structures p137
Bornemann, J., Arndt, F., Heckmann, D., Piontek, C., Semmerow, H., and Schueler, H. see Arndt, F.
Bornemann, J., Arndt, F., Heckmann, D., Semmerow, H., and Vahldieck, R. see Arndt, F.
Bornemann, J., and Arndt, F. Metal-insert filters with improved characteristics p103
Brauns, H., Jacob, A., Burkert, E., and Schünemann, K. see Jacob, A.
Brazil, T., El-Rabaie, S., Choo, E., Fusco, V., and Stewart, C. Large-signal FET simulation using time domain and harmonic balance methods p363
Bressan, M. Rapidly converging expressions of dyadic Green's functions for parallel-plate transmission line p503
Brickell, F., and Westcott, B.S. see Westcott, B.S.
Burkert, E., Jacob, A., Brauns, H., and Schünemann, K. see Jacob, A.

C

Caerou, J.C., Baribaud, M., and Kamarei, M. see Baribaud, M.
Cantoni, A., and Er, M.H. see Er, M.H.
Carroll, J.E., and Islam, S. see Islam, S.
Carter, R.G., and Shunkang, Liu Method for calculating the properties of coupled-cavity slow-wave structures from their dimensions p330
Cecchetti, C., Rizzoli, V., Lipparini, A., and Neri, A. see Rizzoli, V.
Chicon, R., Martin, E., and Navarro, A. Analysis of electromagnetic systems by means of Fourier transform techniques p248
Choo, E., Brazil, T., El-Rabaie, S., Fusco, V., and Stewart, C. see Brazil, T.
Chow, Y.L., and She, X.Y. see She, X.Y.
Chramiec, J., and Glass, A.M. Analysis of microstrip slotline ring 3dB directional couplers p187
Chrissoulidis, D.P., and Kriezis, E.E. EM-wave guidance by a highly conducting surface in uniform motion p143
Chung, G.P., Lee, H.-M., Geller, D., and Haklay, B. see Lee, H.-M.
Climer, B. Modes on a four-conductor line p392
Cole, R.S., Medeiros Filho, F.C., and Sarma, A.D. see Medeiros Filho, F.C.
Cornbleet, S. Thin dielectric lens reflector p288
Cornbleet, S., and Smith, G. Dual reflector antennas with amplitude, phase or Abbé conditions p221
Cullen, A.L., and Xu, J.D. Quasi-optical seven-port reflectometer for millimetre waves p455
Cullen, A.L., and Yeo, S.P. Six-port reflectometer theory for symmetrical five-port junction with directional coupler p277

D

Davies, D.E.N., Karavassilis, N., and Guy, C.G. see Karavassilis, N.
Debney, B.T., Holden, A.J., King, J.P., Metcalfe, J.G., and Oxley, C.H. see Holden, A.J.

E

El-Awadi, R.M., El-Khamy, S.E., and El-Sharawy, E.A. see El-Khamy, S.E.
El-Khamy, S.E., El-Awadi, R.M., and El-Sharawy, E.A. Simple analysis and design of annular ring microstrip antennas p198
El-Rabaie, S., Brazil, T., Choo, E., Fusco, V., and Stewart, C. see Brazil, T.
El-Sharawy, E.A., El-Khamy, S.E., and El-Awadi, R.M. see El-Khamy, S.E.
Er, M.H., and Cantoni, A. Transformation of linearly constrained broadband processors to unconstrained partitioned form p209

F

Fan, Desen Analysis of two-dimensional circular-cylinder-array scatterers p322
Farhat, K.S., and Bennett, J.C. Antenna near-field measurements using directive probes p26
Franceschetti, G., and Mohsen, A. Recent developments in the analysis of reflector antennas. A review p65
Fusco, V., Brazil, T., El-Rabaie, S., Choo, E., and Stewart, C. see Brazil, T.

G

Geller, D., Lee, H.-M., Chung, G.P., and Haklay, B. see Lee, H.-M.
Glass, A.M., and Chramiec, J. see Chramiec, J.
Goto, N., and Tsunoda, Y. see Tsunoda, Y.
Graham, R.K., Westcott, B.S., and Wolton, I.C. see Westcott, B.S.
Guy, C.G., Karavassilis, N., and Davies, D.E.N. see Karavassilis, N.

H

Haklay, B., Lee, H.-M., Chung, G.P., and Geller, D. see Lee, H.-M.
Hall, C.M., James, J.R., and Andrasic, G. see James, J.R.
Hall, P.S. Multioctave bandwidth log-periodic microstrip antenna array p127
Hauth, W. Accurate analysis of latching phase shifters p165
Hayashi, Y., Kitazawa, T., and Mittra, R. see Kitazawa, T.
Hayashi, Y., and Kitazawa, T. see Kitazawa, T.
Heckmann, D., Arndt, F., Bornemann, J., Piontek, C., Semmerow, H., and Schueler, H. see Arndt, F.
Heckmann, D., Arndt, F., Semmerow, H., Bornemann, J., and Vahldieck, R. see Arndt, F.
Helszajn, J., and Sharp, J. Dielectric and permeability effects in HE_{111} open demagnetised ferrite resonators p271
Hente, D., and Jansen, R.H. Frequency domain continuation method for the analysis and stability investigation of nonlinear microwave circuits p351
Hoefer, W.J.R., and Vahldieck, R. see Vahldieck, R.
Holden, A.J., Debney, B.T., King, J.P., Metcalfe, J.G., and Oxley, C.H. Matching of GaAs power FETs using a large-signal modelling technique p399
Holden, A.J., and Oxley, C.H. see Oxley, C.H.
Horno, M., and Marques, R. see Marques, R.
Howes, M.J., McKenzie, W., Barry, D.M., and Snowden, C.M. see McKenzie, W.
Howson, D.P., and Mahmoud, M.S. Electronic tuning of high-Q VHF cavity resonators p159
Hudson, J.E. Dynamic allocation of degrees of freedom in an adaptive antenna p34
Hudson, J.E. Fast allocation of degrees of freedom in an adaptive antenna p507
Hujanen, A.T., Alanen, E., and Lindell, I.V. see Alanen, E.

I

Islam, S., and Carroll, J.E. Warped-mode multiway combline directional couplers p81
Ito, K., Itoh, K., and Kogo, H. Improved design of series-fed circularly polarised printed linear arrays p462
Itoh, K., Ito, K., and Kogo, H. see Ito, K.

J

Jacob, A., Burkert, E., Brauns, H., and Schünemann, K. Dynamic transfer properties of frequency multipliers p175
James, J.R., Hall, C.M., and Andrasic, G. Microstrip elements and arrays with spherical dielectric overlays p474
Jansen, R.H., and Hente, D. see Hente, D.
Johns, P.B. Use of condensed and symmetrical TLM nodes in computer-aided electromagnetic design p368
Judah, S.K., and Judd, M.D. Direct synthesis of the matched symmetric five-port junction from its scattering matrix p95
Judd, M.D., and Judah, S.K. see Judah, S.K.

K

Kagoshima, K., Ando, M., and Kondo, A. see Ando, M.
Kajfez, D., Wheless, W.P., and Ward, R.T. Influence of an airgap on the measurement of dielectric constant by a parallel-plate dielectric resonator p253 e340
Kamarei, M., Baribaud, M., and Caerou, J.C. see Baribaud, M.
Karavassilis, N., Davies, D.E.N., and Guy, C.G. Experimental HF circular array with direction finding and null steering capabilities p147
King, J.P., Holden, A.J., Debney, B.T., Metcalfe, J.G., and Oxley, C.H. see Holden, A.J.
Kirpa, A.I., Veselov, G.I., and Platonov, N.I. see Veselov, G.I.
Kishk, A.A., and Shafai, L. Numerical solution of scattering from coated bodies of revolution using different integral equation formulations p227
Kitazawa, T., Hayashi, Y., and Mittra, R. Asymmetrical coupled coplanar-type transmission lines with anisotropic substrates p265
Kitazawa, T., and Hayashi, Y. Quasistatic characteristics of a coplanar waveguide with thick metal coating p18
Ko, C.C. Adaptive array processing using the Davies beamformer p467
Kogo, H., Ito, K., and Itoh, K. see Ito, K.
Kondo, A., Ando, M., and Kagoshima, K. see Ando, M.
Kooi, P.S., Leong, M.S., and Yeo, S.P. Circular cylindrical cavity loaded with a dielectric sleeve for Gunn-effect oscillator stabilisation application p259

Kriezis, E.E., and Chrissoulidis, D.P. see Chrissoulidis, D.P.

L

Lamb, J.W., and Olver, A.D. Blockage due to subreflector supports in large radiotelescope antennas p43
Lamnabhi, M. Functional analysis of nonlinear circuits: a generating power series approach p375
Lee, H.-M., Chung, G.P., Geller, D., and Haklay, B. H_{11} circular waveguide mode and back scattering cross-section along the axis of a thin walled tubular cylinder of finite length p77
Leong, M.S., Kooi, P.S., and Yeo, S.P. see Kooi, P.S.
Lindell, I.V., Alanen, E., and Hujanen, A.T. see Alanen, E.
Lipparini, A., Rizzoli, V., Cecchetti, C., and Neri, A. see Rizzoli, V.

M

Maclean, D.J.H. Improved computer-aided design of amplifiers using feedback concepts p428
Mahmoud, M.S., and Howson, D.P. see Howson, D.P.
Marincic, A., Benson, F.A., and Tealby, J.M. Measurements of permittivity by the use of surface waves in open and closed structures p441
Marques, R., and Horno, M. Dyadic Green's function for microstrip-like transmission lines on a large class of anisotropic substrates p450
Martin, E., Chicon, R., and Navarro, A. see Chicon, R.
Martin, E., Sanchez, M.C., Villalba, C.R., and Zamarro, J.M. see Sanchez, M.C.
Mathur, S.P., Sinha, A.K., and Sinha, A.K. Experimental study of a slotted telemetry antenna array with a shaped beam for satellite communication p490
McEwan, N.J., and Bashir, S.O. see Bashir, S.O.
McKenzie, W., Barry, D.M., Snowden, C.M., and Howes, M.J. Computer-aided design of MMIC structures p405
Medeiros Filho, F.C., Cole, R.S., and Sarma, A.D. Millimetre-wave rain induced attenuation: theory and experiment p308
Metcalfe, J.G., Holden, A.J., Debney, B.T., King, J.P., and Oxley, C.H. see Holden, A.J.
Miller, A.R., and Vegh, E. Family of curves for the rough surface reflection coefficient p483
Mittra, R., Kitazawa, T., and Hayashi, Y. see Kitazawa, T.
Mohsen, A., and Franceschetti, G. see Franceschetti, G.

N

Navarro, A., Chicon, R., and Martin, E. see Chicon, R.
Neri, A., Rizzoli, V., Cecchetti, C., and Lipparini, A. see Rizzoli, V.

O

Olver, A.D., and Lamb, J.W. see Lamb, J.W.
Oxley, C.H., Holden, A.J., Debney, B.T., King, J.P., and Metcalfe, J.G. see Holden, A.J.
Oxley, C.H., and Holden, A.J. Simple models for high-frequency MESFETs and comparison with experimental results p335

P

Parihar, S., and Webb, J.P. see Webb, J.P.
Park, W.S., and Seshadri, S.R. Reradiation from a grating coupler for a grounded dielectric slab waveguide p10
Pengelly, R. Editorial. Computer-aided design of microwave circuits p329
Piontek, C., Arndt, F., Bornemann, J., Heckmann, D., Semmerow, H., and Schueler, H. see Arndt, F.
Platonov, N.I., Veselov, G.I., and Kirpa, A.I. see Veselov, G.I.

R

Rao, S.M., Arvas, E., and Sarkar, T.K. see Arvas, E.
Rizzoli, V., Cecchetti, C., Lipparini, A., and Neri, A. User-oriented software package for the analysis and optimisation of nonlinear microwave circuits p385
Roome, S.J. Bibliography on propagation factors affecting microwave links operating in the 10 GHz to 30 GHz frequency range p50

S

Şeker, Ş.S. Microwave backscattering from a layer of randomly oriented discs with application to scattering from vegetation p497
Şeker, Ş.S. Radar cross-section of thin dielectric bodies p305
Sanchez, M.C., Villalba, C.R., Zamarro, J.M., and Martin, E. Automatic technique for the characterisation of a dielectric resonator coupled to a microstrip line p99
Sarkar, T.K., Arvas, E., and Rao, S.M. see Arvas, E.
Sarma, A.D., Medeiros Filho, F.C., and Cole, R.S. see Medeiros Filho, F.C.
Schünemann, K., Jacob, A., Burkert, E., and Brauns, H. see Jacob, A.
Schueler, H., Arndt, F., Bornemann, J., Heckmann, D., Piontek, C., and Semmerow, H. see Arndt, F.
Semmerow, H., Arndt, F., Bornemann, J., Heckmann, D., Piontek, C., and Schueler, H. see Arndt, F.
Semmerow, H., Arndt, F., Heckmann, D., Bornemann, J., and Vahldieck, R. see Arndt, F.
Seshadri, S.R., and Park, W.S. see Park, W.S.
Shafai, L., and Kishk, A.A. see Kishk, A.A.
Sharp, J., and Helszajn, J. see Helszajn, J.
She, X.Y., and Chow, Y.L. Interdigital microstrip capacitor as a four-port network p191
Shelley, M.W., and Bond, K. see Bond, K.
Shunkang, Liu, and Carter, R.G. see Carter, R.G.
Sinha, A.K., Mathur, S.P., and Sinha, A.K. see Mathur, S.P.
Smith, G., and Cornbleet, S. see Cornbleet, S.
Snowden, C.M. Computer-aided design of MMICs based on physical device models p419
Snowden, C.M., McKenzie, W., Barry, D.M., and Howes, M.J. see McKenzie, W.
Sohtell, E.V. Mutual admittance between slots on a cylinder using the extended Poynting vector method p238
Stewart, C., Brazil, T., El-Rabaie, S., Choo, E., and Fusco, V. see Brazil, T.

T

Tealby, J.M., Marincic, A., and Benson, F.A. see Marincic, A.
Tsunoda, Y., and Goto, N. Nonuniformly spaced slot array antenna with low sidelobe pattern p155

V

Vahldieck, R., Arndt, F., Heckmann, D., Semmerow, H., and Bornemann, J. see Arndt, F.
Vahldieck, R., and Hoefer, W.J.R. Effect of the metallisation thickness and mounting grooves on the propagation characteristics and bandwidth of finlines p315
Vegh, E., and Miller, A.R. see Miller, A.R.
Veselov, G.I., Kirpa, A.I., and Platonov, N.I. Transient-field representation in terms of steady-improper solutions p21
Villalba, C.R., Sanchez, M.C., Zamarro, J.M., and Martin, E. see Sanchez, M.C.
Viskum, H., and Bach, H. see Bach, H.

W

Ward, R.T., Kajfez, D., and Wheless, W.P. see Kajfez, D.
Webb, J.P., and Parihar, S. Finite element analysis of H-plane rectangular waveguide problems p91
Westcott, B.S., Graham, R.K., and Wolton, I.C. Synthesis of dual-offset shaped reflectors for arbitrary aperture shapes using continuous domain deformation p57
Westcott, B.S., and Brickell, F. General dielectric-lens shaping using complex co-ordinates p122
Wheless, W.P., Kajfez, D., and Ward, R.T. see Kajfez, D.
Williamson, A.G. Variable-length cylindrical post in a rectangular waveguide p1
Wolton, I.C., Westcott, B.S., and Graham, R.K. see Westcott, B.S.

X

Xu, J.D., and Cullen, A.L. see Cullen, A.L.

Y

Yeo, S.P., Kooi, P.S., and Leong, M.S. see Kooi, P.S.
Yeo, S.P., and Cullen, A.L. see Cullen, A.L.

Z

Zamarro, J.M., Sanchez, M.C., Villalba, C.R., and Martin, E. see Sanchez, M.C.

Subject index

ALGORITHMS

Dynamic allocation of degrees of freedom in an adaptive antenna. J.E. Hudson p34

AMPLIFIERS

Computer-aided design of microwave amplifiers by the random addition of new components. K. Anvari and A.J. Baden Fuller p395
Improved computer-aided design of amplifiers using feedback concepts. D.J.H. Maclean p428

ANTENNAS

Dynamic allocation of degrees of freedom in an adaptive antenna. J.E. Hudson p34

ANTENNAS (ADAPTIVE)

Adaptive array processing using the Davies beamformer. C.C. Ko p467
Experimental HF circular array with direction finding and null steering capabilities. N. Karavassilis, D.E.N. Davies and C.G. Guy p147
Fast allocation of degrees of freedom in an adaptive antenna. J.E. Hudson p507
Transformation of linearly constrained broadband processors to unconstrained partitioned form. M.H. Er and A. Cantoni p209

ANTENNAS (APERTURE)

General dielectric-lens shaping using complex co-ordinates. B.S. Westcott and F. Brickell p122
Prediction of the Fresnel region field of a compact antenna test range with serrated edges. P.A. Beeckman p108
Thin dielectric lens reflector. S. Cornbleet p288

ANTENNAS (ARRAYS)

Analysis of two-dimensional circular-cylinder-array scatterers. Desen Fan p322
Dual frequency antenna integration using invisible grating structures. K. Bond and M.W. Shelley p137
Experimental HF circular array with direction finding and null steering capabilities. N. Karavassilis, D.E.N. Davies and C.G. Guy p147
Improved design of series-fed circularly polarised printed linear arrays. K. Ito, K. Itoh and H. Kogo p462
Nonuniformly spaced slot array antenna with low sidelobe pattern. Y. Tsunoda and N. Goto p155

ANTENNAS (DIPOLE)

Exact image method for field calculation in horizontally layered medium above a conducting ground plane. E. Alanen, I.V. Lindell and A.T. Hujanen p297

ANTENNAS (MEASUREMENTS)

Antenna near-field measurements using directive probes. K.S. Farhat and J.C. Bennett p26
Prediction of the Fresnel region field of a compact antenna test range with serrated edges. P.A. Beeckman p108

ANTENNAS (MICROSTRIP)

Dual frequency antenna integration using invisible grating structures. K. Bond and M.W. Shelley p137
Exact image method for field calculation in horizontally layered medium above a conducting ground plane. E. Alanen, I.V. Lindell and A.T. Hujanen p297
Microstrip elements and arrays with spherical dielectric overlays. J.R. James, C.M. Hall and G. Andrasic p474
Multioctave bandwidth log-periodic microstrip antenna array. P.S. Hall p127
Simple analysis and design of annular ring microstrip antennas. S.E. El-Khamy, R.M. El-Awadi and E.A. El-Sharawy p198

ANTENNAS (REFLECTORS)

Blockage due to subreflector supports in large radiotelescope antennas. J.W. Lamb and A.D. Olver p43
Comparison of three cross-polarisation prediction methods for reflector antennas. H. Bach and H. Viskum p325
Dual reflector antennas with amplitude, phase or Abbé conditions. S. Cornbleet and G. Smith p221
New method to evaluate the Fourier transform of a two-dimensional window function with piecewise continuous boundaries. Application in antenna theory. P.A. Beeckman p291
Recent developments in the analysis of reflector antennas. A review. G. Francheschetti and A. Mohsen p65
Scattering of an arbitrary wave by a thin strip grating reflector. M. Ando, A. Kondo and K. Kagoshima p203
Synthesis of dual-offset shaped reflectors for arbitrary aperture shapes using continuous domain deformation. B.S. Westcott, R.K. Graham and I.C. Wolton p57
Thin dielectric lens reflector. S. Cornbleet p288

ANTENNAS (SLOT)

Experimental study of a slotted telemetry antenna array with a shaped beam for satellite communication. S.P. Mathur, A.K. Sinha and A.K. Sinha p490
Mutual admittance between slots on a cylinder using the extended Poynting vector method. E.V. Sohtell p238
Nonuniformly spaced slot array antenna with low sidelobe pattern. Y. Tsunoda and N. Goto p155

ANTENNAS (THEORY)

Analysis of two-dimensional circular-cylinder-array scatterers. Desen Fan p322
General dielectric-lens shaping using complex co-ordinates. B.S. Westcott and F. Brickell p122
New method to evaluate the Fourier transform of a two-dimensional window function with piecewise continuous boundaries. Application in antenna theory. P.A. Beeckman p291

ANTENNAS (WIRE)

Scattering of an arbitrary wave by a thin strip grating reflector. M. Ando, A. Kondo and K. Kagoshima p203

BIOMEDICAL APPLICATIONS

Phase computer at 2.5 GHz. M. Baribaud, J.C. Caerou and M. Kamarei p183

COAXIAL CABLES

Electronic tuning of high-Q VHF cavity resonators. D.P. Howson and M.S. Mahmoud p159

COMPUTER-AIDED DESIGN

Computer optimisation of circuits applied to the modelling of microwave IC passive components. A.J. Baden Fuller p411
Computer-aided design of MMIC structures. W. McKenzie, D.M. Barry, C.M. Snowden and M.J. Howes p405
Computer-aided design of MMICs based on physical device models. C.M. Snowden p419
Computer-aided design of microwave amplifiers by the random addition of new components. K. Anvari and A.J. Baden Fuller p395
Frequency domain continuation method for the analysis and stability investigation of nonlinear microwave circuits. D. Hente and R.H. Jansen p351
Functional analysis of nonlinear circuits: a generating power series approach. M. Lamnabhi p375
Improved computer-aided design of amplifiers using feedback concepts. D.J.H. Maclean p428
Large-signal FET simulation using time domain and harmonic balance methods. T. Brazil, S. El-Rabaie, E. Choo, V. Fusco and C. Stewart p363
Matching of GaAs power FETs using a large-signal modelling technique. A.J. Holden, B.T. Debney, J.P. King, J.G. Metcalfe and C.H. Oxley p399
Method for calculating the properties of coupled-cavity slow-wave structures from their dimensions. R.G. Carter and Liu Shunkang p330
Modal S-matrix method for the optimum design of inductively direct-coupled cavity filters. F. Arndt, J. Bornemann, D. Heckmann, C. Piontek, H. Semmerow and H. Schueler p341
Modes on a four-conductor line. B. Climer p392
Simple models for high-frequency MESFETs and comparison with experimental results. C.H. Oxley and A.J. Holden p335
Use of condensed and symmetrical TLM nodes in computer-aided electromagnetic design. P.B. Johns p368
User-oriented software package for the analysis and optimisation of nonlinear microwave circuits. V. Rizzoli, C. Cecchetti, A. Lipparini and A. Neri p385

CONVERTORS

Analysis of microstrip slotline ring 3dB directional couplers. J. Chramiec and A.M. Glass p187

DIELECTRIC MATERIALS

Automatic technique for the characterisation of a dielectric resonator coupled to a microstrip line. M.C. Sanchez, C.R. Villalba, J.M. Zamarro and E. Martin p99
Circular cylindrical cavity loaded with a dielectric sleeve for Gunn-effect oscillator stabilisation application. P.S. Kooi, M.S. Leong and S.P. Yeo p259
Influence of an airgap on the measurement of dielectric constant by a parallel-plate dielectric resonator. D. Kajfez, W.P. Wheless and R.T. Ward p253 e340

DIODES

Electronic tuning of high-Q VHF cavity resonators. D.P. Howson and M.S. Mahmoud p159

ELECTROMAGNETIC THEORY

Analysis of two-dimensional circular-cylinder-array scatterers. Desen Fan p322
Circular cylindrical cavity loaded with a dielectric sleeve for Gunn-effect oscillator stabilisation application. P.S. Kooi, M.S. Leong and S.P. Yeo p259
E-field solution of TM-scattering from multiple perfectly conducting and lossy dielectric cylinders of arbitrary cross-section. E. Arvas, S.M. Rao and T.K. Sarkar p115
EM-wave guidance by a highly conducting surface in uniform motion. D.P. Chrissoulidis and E.E. Kriezis p143
Exact image method for field calculation in horizontally layered medium above a conducting ground plane. E. Alanen, I.V. Lindell and A.T. Hujanen p297
Microwave backscattering from a layer of randomly oriented discs with application to scattering from vegetation. Ş.S. Şeker p497
Mutual admittance between slots on a cylinder using the extended Poynting vector method. E.V. Sohtell p238
Numerical solution of scattering from coated bodies of revolution using different integral equation formulations. A.A. Kishk and L. Shafai p227
Phase computer at 2.5 GHz. M. Baribaud, J.C. Caerou and M. Kamarei p183
Radar cross-section of thin dielectric bodies. Ş.S. Şeker p305
Scattering of an arbitrary wave by a thin strip grating reflector. M. Ando, A. Kondo and K. Kagoshima p203
Transient-field representation in terms of steady-improper solutions. G.I. Veselov, A.I. Kirpa and N.I. Platonov p21

ELECTRON DEVICES

Method for calculating the properties of coupled-cavity slow-wave structures from their dimensions. R.G. Carter and Liu Shunkang p330
Phase computer at 2.5 GHz. M. Baribaud, J.C. Caerou and M. Kamarei p183

FEEDBACK

Improved computer-aided design of amplifiers using feedback concepts. D.J.H. Maclean p428

FERRITES AND FERROMAGNETICS

Dielectric and permeability effects in HE_{111} open demagnetised ferrite resonators. J. Helszajn and J. Sharp p271

MATHEMATICAL TECHNIQUES

Accurate analysis of latching phase shifters. W. Hauth p165
Analysis of electromagnetic systems by means of Fourier transform techniques. R. Chicon, E. Martin and A. Navarro p248
Direct synthesis of the matched symmetric five-port junction from its scattering matrix. S.K. Judah and M.D. Judd p95
Dyadic Green's function for microstrip-like transmission lines on a large class of anisotropic substrates. R. Marques and M. Horno p450
Dynamic allocation of degrees of freedom in an adaptive antenna. J.E. Hudson p34
E-field solution of TM-scattering from multiple perfectly conducting and lossy dielectric cylinders of arbitrary cross-section. E. Arvas, S.M. Rao and T.K. Sarkar p115
EM-wave guidance by a highly conducting surface in uniform motion. D.P. Chrissoulidis and E.E. Kriezis p143
Finite element analysis of *H*-plane rectangular waveguide problems. J.P. Webb and S. Parihar p91
General dielectric-lens shaping using complex co-ordinates. B.S. Westcott and F. Brickell p122
Interdigital microstrip capacitor as a four-port network. X.Y. She and Y.L. Chow p191
Radar cross-section of thin dielectric bodies. Ş.S. Şeker p305
Rapidly converging expressions of dyadic Green's functions for parallel-plate transmission line. M. Bressan p503
Transformation of linearly constrained broadband processors to unconstrained partitioned form. M.H. Er and A. Cantoni p209
Transient-field representation in terms of steady-improper solutions. G.I. Veselov, A.I. Kirpa and N.I. Platonov p21

MICROSTRIP AND STRIPLINE

Analysis of microstrip slotline ring 3dB directional couplers. J. Chramiec and A.M. Glass p187
Automatic technique for the characterisation of a dielectric resonator coupled to a microstrip line. M.C. Sanchez, C.R. Villalba, J.M. Zamarro and E. Martin p99
Interdigital microstrip capacitor as a four-port network. X.Y. She and Y.L. Chow p191
Modes on a four-conductor line. B. Climer p392
Warped-mode multiway combline directional couplers. S. Islam and J.E. Carroll p81

MICROWAVE ACTIVE COMPONENTS

Automatic technique for the characterisation of a dielectric resonator coupled to a microstrip line. M.C. Sanchez, C.R. Villalba, J.M. Zamarro and E. Martin p99
Computer-aided design of microwave amplifiers by the random addition of new components. K. Anvari and A.J. Baden Fuller p395
Dynamic transfer properties of frequency multipliers. A. Jacob, E. Burkert, H. Brauns and K. Schünemann p175
Influence of an airgap on the measurement of dielectric constant by a parallel-plate dielectric resonator. D. Kajfez, W.P. Wheless and R.T. Ward p253 e340
Six-port reflectometer theory for symmetrical five-port junction with directional coupler. A.L. Cullen and S.P. Yeo p277

MICROWAVE CIRCUITS AND NETWORKS

Computer optimisation of circuits applied to the modelling of microwave IC passive components. A.J. Baden Fuller p411
Computer-aided design of MMIC structures. W. McKenzie, D.M. Barry, C.M. Snowden and M.J. Howes p405
Computer-aided design of MMICs based on physical device models. C.M. Snowden p419
Design formulas for impedance matching using a hermite line. S.O. Ajose p319
Dynamic transfer properties of frequency multipliers. A. Jacob, E. Burkert, H. Brauns and K. Schünemann p175
Frequency domain continuation method for the analysis and stability investigation of nonlinear microwave circuits. D. Hente and R.H. Jansen p351
Functional analysis of nonlinear circuits: a generating power series approach. M. Lamnabhi p375
Large-signal FET simulation using time domain and harmonic balance methods. T. Brazil, S. El-Rabaie, E. Choo, V. Fusco and C. Stewart p363
Matching of GaAs power FETs using a large-signal modelling technique. A.J. Holden, B.T. Debney, J.P. King, J.G. Metcalfe and C.H. Oxley p399
Method for calculating the properties of coupled-cavity slow-wave structures from their dimensions. R.G. Carter and Liu Shunkang p330
Modes on a four-conductor line. B. Climer p392
Simple models for high-frequency MESFETs and comparison with experimental results. C.H. Oxley and A.J. Holden p335
Use of condensed and symmetrical TLM nodes in computer-aided electromagnetic design. P.B. Johns p368
User-oriented software package for the analysis and optimisation of nonlinear microwave circuits. V. Rizzoli, C. Cecchetti, A. Lipparini and A. Neri p385
Warped-mode multiway combline directional couplers. S. Islam and J.E. Carroll p81

MICROWAVE MEASUREMENTS

Phase computer at 2.5 GHz. M. Baribaud, J.C. Caerou and M. Kamarei p183
Quasi-optical seven-port reflectometer for millimetre waves. A.L. Cullen and J.D. Xu p455

MICROWAVE PASSIVE COMPONENTS

Computer optimisation of circuits applied to the modelling of microwave IC passive components. A.J. Baden Fuller p411

MILLIMETRE WAVE DEVICES AND COMPONENTS

Quasi-optical seven-port reflectometer for millimetre waves. A.L. Cullen and J.D. Xu p455

MODELLING

Matching of GaAs power FETs using a large-signal modelling technique. A.J. Holden, B.T. Debney, J.P. King, J.G. Metcalfe and C.H. Oxley p399

NUMERICAL ANALYSIS

Family of curves for the rough surface reflection coefficient. A.R. Miller and E. Vegh p483
New method to evaluate the Fourier transform of a two-dimensional window function with piecewise continuous boundaries. Application in antenna theory. P.A. Beeckman p291
Numerical solution of scattering from coated bodies of revolution using different integral equation formulations. A.A. Kishk and L. Shafai p227
Recent developments in the analysis of reflector antennas. A review. G. Franceschetti and A. Mohsen p65

PERMITTIVITY

Measurements of permittivity by the use of surface waves in open and closed structures. A. Marincic, F.A. Benson and J.M. Tealby p441

PROPAGATION IN RANDOM MEDIA

Microwave backscattering from a layer of randomly oriented discs with application to scattering from vegetation. Ş.S. Şeker p497

RADAR AND RADIONAVIGATION

Accurate analysis of latching phase shifters. W. Hauth p165
Radar cross-section of thin dielectric bodies. Ş.S. Şeker p305

RADIO ASTRONOMY

Blockage due to subreflector supports in large radiotelescope antennas. J.W. Lamb and A.D. Olver p43

RADIO-WAVE PROPAGATION (MICROWAVE)

Bibliography on propagation factors affecting microwave links operating in the 10 GHz to 30 GHz frequency range. S.J. Roome p50

RADIO-WAVE PROPAGATION (MILLIMETRE WAVE)

Bibliography on propagation factors affecting microwave links operating in the 10 GHz to 30 GHz frequency range. S.J. Roome p50
Microwave propagation in dust storms: a review. S.O. Bashir and N.J. McEwan p241
Millimetre-wave rain induced attenuation: theory and experiment. F.C. Medeiros Filho, R.S. Cole and A.D. Sarma p308

RADIO-WAVE PROPAGATION (TERRAIN EFFECTS)

Family of curves for the rough surface reflection coefficient. A.R. Miller and E. Vegh p483

REMOTE SENSING

Microwave backscattering from a layer of randomly oriented discs with application to scattering from vegetation. Ş.S. Şeker p497

SATELLITE LINKS AND SPACE COMMUNICATION

Experimental study of a slotted telemetry antenna array with a shaped beam for satellite communication. S.P. Mathur, A.K. Sinha and A.K. Sinha p490

TRANSMISSION LINES

Asymmetrical coupled coplanar-type transmission lines with anisotropic substrates. T. Kitazawa, Y. Hayashi and R. Mittra p265
Direct synthesis of the matched symmetric five-port junction from its scattering matrix. S.K. Judah and M.D. Judd p95
Dyadic Green's function for microstrip-like transmission lines on a large class of anisotropic substrates. R. Marques and M. Horno p450
Measurements of permittivity by the use of surface waves in open and closed structures. A. Marincic, F.A. Benson and J.M. Tealby p441
Rapidly converging expressions of dyadic Green's functions for parallel-plate transmission line. M. Bressan p503

WAVEGUIDES AND WAVEGUIDE COMPONENTS

A new technique for absolute temperature compensation of tunable resonant cavities. S.A. Adeniran e18
Accurate analysis of latching phase shifters. W. Hauth p165
Analysis of electromagnetic systems by means of Fourier transform techniques. R. Chicon, E. Martin and A. Navarro p248
Dielectric and permeability effects in HE_{111} open demagnetised ferrite resonators. J. Helszajn and J. Sharp p271
Effect of the metallisation thickness and mounting grooves on the propagation characteristics and bandwidth of finlines. R. Vahldieck and W.J.R. Hoefer p315
Finite element analysis of *H*-plane rectangular waveguide problems. J.P. Webb and S. Parihar p91
H_{11} circular waveguide mode and back scattering cross-section along the axis of a thin walled tubular cylinder of finite length. H.-M. Lee, G.P. Chung, D. Geller and B. Haklay p77
Measurements of permittivity by the use of surface waves in open and closed structures. A. Marincic, F.A. Benson and J.M. Tealby p441
Metal-insert filters with improved characteristics. J. Bornemann and F. Arndt p103
Modal S-matrix method for the optimum design of inductively direct-coupled cavity filters. F. Arndt, J. Bornemann, D. Heckmann, C. Piontek, H. Semmerow and H. Schueler p341
Quasistatic characteristics of a coplanar waveguide with thick metal coating. T. Kitazawa and Y. Hayashi p18
Reradiation from a grating coupler for a grounded dielectric slab waveguide. W.S. Park and S.R. Seshadri p10
Stopband optimised *E*-plane filters with multiple metal inserts of variable number per coupling element. F. Arndt, D. Heckmann, H. Semmerow, J. Bornemann and R. Vahldieck p169
Variable-length cylindrical post in a rectangular waveguide. A.G. Williamson p1

THE INSTITUTION
OF ELECTRICAL
ENGINEERS

IEE Proceedings

Vol. 133, 1986

Published by
The IEE, Savoy Place, London WC2R 0BL, United Kingdom
Publishing Department: PO Box 8, Southgate House, Stevenage, Herts. SG1 1HQ, United Kingdom

IEE Proceedings

The Institution of Electrical Engineers, Savoy Place, London WC2R 0BL, United Kingdom.
Publishing Department: PO Box 8, Southgate House, Stevenage, Herts. SG1 1HQ, United Kingdom

Volume 133 1986

The *IEE Proceedings* is published in ten Parts, as follows:

Part A: Physical Science, Measurement and Instrumentation, Management and Education, Reviews

Part B: Electric Power Applications

Part C: Generation, Transmission and Distribution

Part D: Control Theory and Applications

Part E: Computers and Digital Techniques

Part F: Communications, Radar and Signal Processing

Part G: Electronic Circuits and Systems

Part H: Microwaves, Antennas and Propagation

Part I: Solid-State and Electron Devices

Part J: Optoelectronics

Six issues of each Part are published during the year, and additional special issues are published covering specialist areas.

This publication is copyright under the Berne Convention and the International Copyright Convention. All rights reserved. Apart from any copying under the UK Copyright Act 1956, part 1, section 7, whereby a single copy of this article may be supplied, under certain conditions, for the purposes of research or private study, by a library of a class prescribed by the UK Board of Trade Regulations (Statutory Instruments, 1957, no. 868), no part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means without the prior permission of the copyright owners. Permission is, however, not required to copy abstracts of papers or articles on condition that a full reference to the source is shown.

An IEE licensing arrangement exists whereby organisations entering into an agreement are legally entitled to make up to ten copies of an IEE paper or article.

Authorisation to photocopy items for internal or personal use, or for the internal or personal use of specific clients, is granted by the Institution of Electrical Engineers for libraries and other users registered with the Copyright Clearance Center Transactional Reporting Service, provided that the base fee of $2.00 per copy is paid directly to the Copyright Clearance Center, Inc., 21 Congress Street, Salem, MA 01970, USA. 0143–702X/86 $2.00 + 0.00. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale.

Photocopies of individual papers published in the *IEE Proceedings* can be supplied from the IEE Library at 10p per page plus a handling change of 50p per page, which covers the cost of surface mail (airmail extra). The handling charge is waived if reprints are collected from Savoy Place by purchasers.

The telephone number of the IEE London office is 01 240 1871; telex: 261176 IEELDN G; facsimile: 01 240 7735

The IEE is not as a body responsible for the opinions expressed by individual authors.
The IEE is a member of the Association of Learned & Professional Society Publishers.

© 1986: The Institution of Electrical Engineers

Secretary of the IEE: H.H.W. Losty, D.Eng., F.Eng.
Managing Editor: Bernard Dunkley; *Senior Assistant Editor:* Stephen Cokeham
Assistant Editors: Steve Barrett, Jenni Doig, James Newall, Richard Dymond, Dan Clery
Graphics Manager: Maurice Partridge; *Marketing Manager*: Alan Baldwin

Typeset by: Santype International Ltd., Salisbury, Wilts., United Kingdom
Printed by: Unwin Brothers Ltd., Old Woking, Surrey, United Kingdom

Index

IEE Proceedings

Vol. 133, 1986

ABBREVIATIONS

- p paper, address or lecture
- d discussion on a paper
- a abstract of paper or address
- e errata
- s synopsis of a paper published in full in another Part of the IEE Proceesings

Author index

A

Abbas, A., Marshall, J.E., and Walton, K. Design of delayed control systems using Zakian's framework D d313

Abdalla, O.H., Sharaf, S.M.Z., Hogg, B.W., and El-Sayed, M.L. see Sharaf, S.M.Z.

Abu-El-Yazid, T., Moustafa, K.A.F., and Gaafar, M.Y. see Moustafa, K.A.F.

Abu-Nasser, A., and Yacamini, R. see Yacamini, R.

Abuelma'atti, M.T. Approximate method for hand computation of nonlinear distortion performance of varactor tuning circuits G p265

Abuelma'atti, M.T. Modelling the DC characteristics of VMOS power transistors for computer-aided design I p161

Acha, E., Arrillaga, J., Densem, T.J., and Bodger, P.S. see Arrillaga, J.

Adachi, F., Feeney, M.T., Williamson, A.G., and Parsons, J.D. Crosscorrelation between the envelopes of 900 MHz signals received at a mobile radio base station site F p506

Adama, A., and Lind, L.F. Design of low intersymbol interference partial response data transmission filters G p195

Adama, A., and Lind, L.F. Intersymbol interference and timing jitter performance of realisable data transmission filters F p21

Adams, G.R., Mellis, J., and Ward, K.D. see Mellis, J.

Adams, M.J., and Landsberg, P.T. see Landsberg, P.T.

Adams, M.J., and Laybourn, P.J.R. Editorial J p189

Adatia, N., Mehler, M., and Tun, S. see Mehler, M.

Adeniran, S.A. A new technique for absolute temperature compensation of tunable resonant cavities H e18

Aghvami, A.H. Further analysis of bandlimited 16-ary QAM signalling in satellite channels F p232

Ahmed, M.M., Taufiq, J.A., Goodman, C.J., and Lockwood, M. Electrical instability in a voltage source inverter-fed induction motor drive at constant speed B p299

Ajmani, D.B.S., and Roberts, J.B. see Roberts, J.B.

Ajose, S.O. Design formulas for impedance matching using a hermite line H p319

Akers, N.P., and Vilar, E. RF sampling gates: a brief review A p45

Akiba, Y., Supadech, S., Okazaki, S., Kurosu, T., and Iida, M. see Supadech, S.

Al-Hussaini, E.K., and Ibrahim, B.M. Comparison of adaptive cell-averaging detectors for multiple-target situations F p217

Al-Mukhtar, A.A.A., and Turner, L.F. New results on the statistical properties of pseudonoise sequences G p99

Al-Shaikhli, A.K.M., and Hobson, L. Novel technique for the design of induction billet heaters B p323

Alanen, E., Lindell, I.V., and Hujanen, A.T. Exact image method for field calculation in horizontally layered medium above a conducting ground plane H p297

Albares, D.J. US Navy beginnings in fibre optics J p211

Alberghina, L., Mariani, L., and Martegani, E. see Mariani, L.

Aldridge, N.B., Foote, P.D., Hall, T.J., and Levenston, A.G. see Foote, P.D.

Aleksandrov, G.N., and Gerasimov, Yu.A. Generalised characteristics for the electric strength of phase-to-phase insulation in EHV overhead transmission lines and substations A p543

Allan, D.A. Stability of Schottky barriers at high temperatures for use in GaAs MESFET technology I p18

Allen, C.R., and Yung, H.C. see Yung, H.C.

Allen, D.H.O. Address as Chairman of the IEE Management & Design Division: Engineering for the market A p16

Allen, E.M., Ifeachor, E.C., Jervis, B.W., Morris, E.L., and Hudson, N.R. see Ifeachor, E.C.

Allen, N.L. Corona, breakdown and humidity in the rod-plane gap A p562

Allera, S.V., and McGowan, J.E. Medium-term forecasts of half-hourly system demand: development of an interactive demand estimation coefficient model C p393

Allibone, T.E., and Saunderson, J.C. Observation of corona phenomena at very high direct voltages A p569

Amann, M.-C., and Stegmüller, B. Threshold current analysis of InGaAsP–InP ridge-waveguide lasers J p341

Amaratunga, G.A.J., and Ismail, R. Quasilinear formulation with a simple remeshing scheme for the finite element based simulation of dopant diffusion in silicon I p221

Amblard, P., Caspi, P., and Halbwachs, N. Use of time functions to describe and explain circuit behaviour E p271

Ambrosiadou, V., and Singh, M.G. Strategic decision making in competitive marketing channels using a differential games framework A p301

Ametani, A., and Nakanishi, H. see Nakanishi, H.

Ammasaigounden, N., Subbiah, M., and Krishnamurthy, M.R. Wind-driven self-excited pole-changing induction generators B p315

Amor, C.F. The graphical methods of Sumpner, Drysdale and Marchant: solving the Kelvin equation A p387

Anastassopoulos, V., and Deliyannis, T. Method to design FIR Hilbert transformers for delta modulated signals G p113

Anders, G.J., El-Kady, M.A., Ganton, R.W.D., Horrocks, D.J., and Motlis, J. Calculations of power cable load capability on a desktop computer: a review C p431

Ando, M., Kondo, A., and Kagoshima, K. Scattering of an arbitrary wave by a thin strip grating reflector H p203

Ando, T., Yamasaki, H., and Sugishita, T. Analysis of optical writing mode in solid-state imaging devices with inherent MNOS memory I p6

Andrasic, G., James, J.R., and Hall, C.M. see James, J.R.

Antonopoulos, C.S., and Kriezis, E.E. Force on a parallel circular loop moving above a conducting slab and the eddy-current distribution A p601

Anvari, K., and Baden Fuller, A.J. Computer-aided design of microwave amplifiers by the random addition of new components H p395

Aplevich, J.D., Chen, Y.C., and Wilson, W.J. see Chen, Y.C.

Arambepola, S.L., and Cozens, J.R. Propagation in a doubly periodic dielectric guide J p332

Arazi, B. Error correction in a reversed communications scenario F p562

Arazi, B. New channel assignment strategy in cellular mobile radiocommunication systems F p569

Arbab, M.N., and Auckland, D.W. The influence of vibration on the initiation of trees in dielectrics A p618

Arndt, F., Bornemann, J., Heckmann, D., Piontek, C., Semmerow, H., and Schueler, H. Modal S-matrix method for the optimum design of inductively direct-coupled cavity filters H p341

Arndt, F., Heckmann, D., Semmerow, H., Bornemann, J., and Vahldieck, R. Stopband optimised *E*-plane filters with multiple metal inserts of variable number per coupling element H p169

Arndt, F., and Bornemann, J. see Bornemann, J.

Arnold, J.F., and Cavenor, M.C. Transmission of images using an adaptive ternary delta modulator F p543

Arnold, J.M. Geometrical theories of wave propagation: a contemporary review J p165

Arrillaga, J., Acha, E., Densem, T.J., and Bodger, P.S. Ineffectiveness of transmission line transpositions at harmonic frequencies C p99

Arumugam, R., Lindsay, J.F., and Krishnan, R. see Lindsay, J.F.

Arvas, E., Rao, S.M., and Sarkar, T.K. E-field solution of TM-scattering from multiple perfectly conducting and lossy dielectric cylinders of arbitrary cross-section H p115

Auckland, D.W., and Arbab, M.N. see Arbab, M.N.

Aynsley, M., Montague, G.A., Morris, A.J., Wright, A.R., and Ward, A.C. see Montague, G.A.

Ayrom, F., and Zhong, G.-Q. Chaos in Chua's circuit D p307

B

Bach, H., and Viskum, H. Comparison of three cross-polarisation prediction methods for reflector antennas H p325

Bacon, D.W., Tade, M.O., and Bayoumi, M.M. see Tade, M.O.

Bada, A.T. Comments on design of delayed control systems using Zakian's framework D d313

Baden Fuller, A.J. Computer optimisation of circuits applied to the modelling of microwave IC passive components H p411

Baden Fuller, A.J., and Anvari, K. see Anvari, K.

Baets, R., Van de Capelle, J.P., and Vankwikelberge, P. see Van de Capelle, J.P.

Baillie, W.L., Makh, S.S., Hart, A.D., and Openshaw, P.M. see Makh, S.S.

Baillie, W.L., Openshaw, P.M., Hart, A.D., and Makh, S.S. Development of liquid crystal light valves using $Bi_{12}SiO_{20}$ as the photoconductor. Part 2: Device performance J p65

Balachandran, K. On the controllability of a class of nonlinear systems with time-varying multiple delays in control D p297

Baldomir, D. Differential forms and electromagnetism in 3-dimensional Euclidean space R^3 A p139

Bamford, W. Industrial electrical measuring instrument makers, 1890–1960: reminiscent review (Lecture) A p125

Bar-Ness, Y., and Messer, H. see Messer, H.

Barboy, B., Lomes, A., and Perkalski, E. Cell-averaging CFAR for multiple-target situations F p176

Baribaud, M., Caerou, J.C., and Kamarei, M. Phase computer at 2.5 GHz H p183

Barlaud, M., de Fornel, B., Gauvrit, M., and Requier, J.P. Computation of optimal functions for transients of a photovoltaic array inverter induction motor generator B p16

Barlow, P.S., Davis, R.G., and Lazarus, M.J. Negative differential output conductance of self heated power MOSFETs I p177

Barnes, R., and Vaahedi, E. see Vaahedi, E.

Barnes, W.J., and Davey, K.R. see Davey, K.R.

Barr, D.M. Editorial: Hydro-electric power C p109

Barros, M. de P., and Lind, L.F. On the splitting of a complex-coefficient polynomial G p95

Barry, D.M., McKenzie, W., Snowden, C.M., and Howes, M.J. see McKenzie, W.

Barry, J.N., and George, R.G. Semiconductor memories (Commissioned IEE review) E p8

Bashir, S.O., and McEwan, N.J. Microwave propagation in dust storms: a review H p241

Bastawros, A., and Girgis, G.A. see Girgis, G.A.

Bayoumi, M.M., Tade, M.O., and Bacon, D.W. see Tade, M.O.

Beattie, W.C., Irwin, G.W., and Monteith, W. see Irwin, G.W.

Beaty, R.T. Evolution towards automation A p332

Beck, M.B. Identification, estimation and control of biological waste-water treatment processes D p254

Bedini, L., Fossi, S., and Reggiannini, R. Generalised crosscorrelator with data-estimated weighting function: a simulation analysis F p195
F e231

Beeckman, P.A. New method to evaluate the Fourier transform of a two-dimensional window function with piecewise continuous boundaries. Application in antenna theory H p291

Beeckman, P.A. Prediction of the Fresnel region field of a compact antenna test range with serrated edges H p108

Begg, M.C., and Williamson, S. see Williamson, S.

Bektas, S.I., Farish, O., and Hizal, M. Computation of the electric field at a solid/gas interface in the presence of surface and volume charges A p577

Belchamber, R.M., Kingswood, N., Dagless, E.L., Betteridge, D., Lilley, T., and Roberts, J.D.M. see Kingswood, N.

Bellgardt, K.-H., Kuhlmann, W., Meyer, H.-D., Schügerl, K., and Thoma, M. Application of an extended Kalman filter for state estimation of a yeast fermentation D p226

Bendien, J.Ch., Fregien, G., and van Wyk, J.D. High-efficiency on-board battery charger with transformer isolation, sinusoidal input current and maximum power factor B p197

Benelli, G. Go-back-*N* ARQ scheme with buffer at the receiver F p271

Benjamin, R. Use of toleranced 'cost' functions for circuit routing in complex communications networks F p205

Bennett, J.C., and Farhat, K.S. see Farhat, K.S.

Bennett, R.B., Hilliar, R.A., Jackson, R.J., and Ward, D.A. see Hilliar, R.A.
Bennion, I., and Kirkby, C.J.G. see Kirkby, C.J.G.
Benson, F.A. Editorial: IEE Reviews **A** p173
Benson, F.A., Cudd, P.A., and Sitch, J.E. see Cudd, P.A.
Benson, F.A., Marincic, A., and Tealby, J.M. see Marincic, A.
Berger, C.S. Self-tuning control of offset using a moving average filter **D** p184
Berle, F.J. Mixed triangulation/trilateration technique for emitter location **F** p638
Berlin, P. Inmarsat's second-generation satellites **F** p406
Betancourt, R. Efficient parallel processing technique for inverting matrices with random sparsity **E** p235
Betteridge, D., Kingswood, N., Dagless, E.L., Belchamber, R.M., Lilley, T., and Roberts, J.D.M. see Kingswood, N.
Bezanson, L.W., and Harris, S.L. Identification and control of an extruder using multivariable algorithms **D** p145
Bharath Kumar, K., Krishnapur, R., and Mondal, T.B. Accurate bias dependent linear model for bipolar transistors up to 6 GHz **I** p214
Bhattacharjee, G.P., and Ghosh, R.K. see Ghosh, R.K.
Bhattacharya, G., and Saha, H. Simple automatic current/voltage characteristics plotter for solar cells and arrays **G** p289
Bickers, L., and Westbrook, L.D. Reduction of transient laser chirp in 1.5 μm DFB lasers by shaping the modulation pulse **J** p155
Bickford, J.P., and Heaton, A.G. Transient overvoltages on power systems (Commissioned IEE review) **C** p201
Billinton, R., and Cheng, L. Incorporation of weather effects in transmission system models for composite system adequacy evaluation **C** p319
Billinton, R., and Wee, C.L. see Wee, C.L.
Binns, D.F., Crompton, A.B., and Jaberansari, A. Economic design of a 50 kVA distribution transformer. Part 1: The use of liquids of low flammability **C** p445
Binns, D.F., Crompton, A.B., and Jaberansari, A. Economic design of a 50 kVA distribution transformer. Part 2: Effect of different core steels and loss capitalisations **C** p451
Binns, K.J., and Low, T.S. see Low, T.S.
Biswas, S.K., Mahesh, M.S., and Iyengar, B.S.R. Simple new PWM patterns for thyristor three-phase AC/DC convertors **B** p354
Blaauw, G.A., van Sinderen, M., and Huijs, C. see van Sinderen, M.
Black, R.J., and Bourbonnais, R. Core-mode cutoff for finite-cladding lightguides **J** p377
Blau, W., and Dennis, W.M. see Dennis, W.M.
Bodger, P.S., Arrillaga, J., Acha, E., and Densem, T.J. see Arrillaga, J.
Bodger, P.S., Moutter, S.P., and Gough, P.T. see Moutter, S.P.
Bogle, A.G. Rectifier circuit performance: some new approximate formulas. Addendum **G** p128
Bogner, R.E., and Davis, B.R. Correlations of wave variables in a passive network **G** p165
Bohley, E.P., and DeVore, R.V. see DeVore, R.V.
Bolton, H.R., Liu, Y.D., and Mallinson, N.M. Investigation into a class of brushless DC motor with quasisquare voltages and currents **B** p103
Bond, K., and Shelley, M.W. Dual frequency antenna integration using invisible grating structures **H** p137
Bond, S.D., and Fox, B. Optimal thermal unit scheduling using improved dynamic programming algorithm **C** p1
Bornemann, J., Arndt, F., Heckmann, D., Piontek, C., Semmerow, H., and Schueler, H. see Arndt, F.
Bornemann, J., Arndt, F., Heckmann, D., Semmerow, H., and Vahldieck, R. see Arndt, F.
Bornemann, J., and Arndt, F. Metal-insert filters with improved characteristics **H** p103
Bose, N.K., and Zeheb, E. Kharitonov's theorem and stability test of multidimensional digital filters **G** p187
Boucouvalas, A.C., and Georgiou, G. Tapering of single-mode optical fibres **J** p385
Bourbonnais, R., and Black, R.J. see Black, R.J.
Bowes, S.R., and Midoun, A. New PWM switching strategy for microprocessor controlled inverter drives **B** p237
Bracho, S., Solana, J.M., and Michell, J.A. see Solana, J.M.
Bracho, S., and Cagigal, N.P. see Cagigal, N.P.
Bradbury, J., Orawski, G., and Vanner, M.J. see Orawski, G.
Bradley, D.A., Nellis, C.L., and Sarkinen, S.H. see Nellis, C.L.
Brameller, A., Khodaverdian, E., and Dunnett, R.M. see Khodaverdian, E.
Brauns, H., Jacob, A., Burkert, E., and Schünemann, K. see Jacob, A.
Brazil, T., El-Rabaie, S., Choo, E., Fusco, V., and Stewart, C. Large-signal FET simulation using time domain and harmonic balance methods **H** p363
Bressan, M. Rapidly converging expressions of dyadic Green's functions for parallel-plate transmission line **H** p503
Brickell, F., and Westcott, B.S. see Westcott, B.S.
Broadway, A.R.W., and Ismail, K.S. Phase modulated 3-phase pole changing windings **B** p61
Bromhead, J.R. Offshore electrical systems **C** p457
Bromley, A.G., and Nicholson, T. Pedagogic computers **E** p212
Brown, J.E., Drury, W., Jones, B.L., and Vas, P. Analysis of the periodic transient state of a static Kramer drive **B** p21
Brownrigg, D.R.K. Generation of representative members of an *RrSst* weighted median filter class **F** p445
Brunt, S.P., Singleton, J.F., and Seeds, A.J. see Singleton, J.F.
Bryan, W.E., Penman, J., Dey, M.N., and Tait, A.J. see Penman, J.
Bryson, Sir Lindsay Inaugural address: All at sea **A** p1
Burdis, E.P., Headley, A., and Kelsey, T. see Headley, A.
Burkert, E., Jacob, A., Brauns, H., and Schünemann, K. see Jacob, A.
Burns, R.W. Address as Chairman of the IEE Science, Education & Technology Division: Seeing by electricity **A** p27
Buttinger, M.R., and Sadler, R.J. see Sadler, R.J.
Buus, J. Dynamic single-mode operation of DFB lasers with phase shifted gratings and reflecting mirrors **J** p163
Buus, J. Simple theory for the spectral properties of semiconductor lasers with reduced reflectivity **J** p121

C

Caerou, J.C., Baribaud, M., and Kamarei, M. see Baribaud, M.
Cagigal, N.P., and Bracho, S. Algorithmic determination of linear-feedback in a shift register for pseudorandom binary sequence generation **G** p191
Calandra, E.F., and Sommariva, A.M. Approach to the analysis of nonlinear feedback oscillators under large-signal injection **G** p233 **G** e284
Caldecote, R. The competitive position of the European telecommunications industry **A** p365
Callcut, V.A. Coppers for electrical purposes (Commissioned IEE review) **A** p174
Cameron, J.R., Thomson, W.T., and Dow, A.B. Vibration and current monitoring for detecting airgap eccentricity in large induction motors **B** p155
Campbell, D.S., Hamilton-Price, P.G., Read, R.F., Goodsell, D.J., Mulder, J., and Cohen, I.H. see Hamilton-Price, P.G.
Campbell, S.L. On using orthogonal functions with singular systems **D** d191 **D** d315
Cantoni, A., and Er, M.H. see Er, M.H.
Carroll, J.E., White, I.H., and Gallagher, D.F.G. Dependence of chirp in injection lasers on temporal optical pulse shape **J** p279
Carroll, J.E., and Islam, S. see Islam, S.
Carsberg, B. OFTEL: a new approach to regulation (Lecture) **A** p152
Carter, R.G., and Shunkang, Liu Method for calculating the properties of coupled-cavity slow-wave structures from their dimensions **H** p330
Carter, R.G., and Srivastava, V. see Srivastava, V.
Caspi, P., Amblard, P., and Halbwachs, N. see Amblard, P.
Castella, F.R., and Thurber, R.E. Semicoherent Doppler processing technique **F** p87
Cavener, M.C., and Arnold, J.F. see Arnold, J.F.
Cecchetti, C., Rizzoli, V., Lipparini, A., and Neri, A. see Rizzoli, V.
Cham, W.K., and Clarke, R.J. Application of the principle of dyadic symmetry to the generation of orthogonal transforms **F** p264
Chan, A.Y.C., and Juhasz, C. Photo-induced discharge effects of ZnO semiconductor powder-resin binder layers **I** p203
Chandler, A. A systems engineering approach to software development **A** p355
Chandler, J.A., Hinch, L.W., Fair, R.I., Hughes, D.A., Peraino, J. and Rowe, P.W. Januna River 230 kV crossing, Bangladesh—Pt. 2: Construction **C** d226
Chandler, J.A., Hinch, L.W., Hughes, D.A., McDowell, D.M., Rowe, P.W., and Wood, A.B. Jamuna River 230 kV crossing, Bangladesh—Pt. 1: Design **C** d226
Chang, C.Y., Fang, B.C., Wang, Y.D., and Tzeng, F.C. Isolated Al-SiN-(p)Si-(n)Si MISS device **I** p189
Chang, C.Y., Liu, W.C., Wang, Y.H., and Liao, S.A. see Liu, W.C.
Chao, S.Y., and Yue, L. see Yue, L.
Charalambous, C. Closed form approach to minimax design of 1-dimensional recursive digital filters **G** p121
Charlot, J.-J., and Toutain, S. Distributed charge (sub)micron MOS transistor model **J** p207
Chen, B.-S., and Lin, C.-M. see Lin, C.-M.
Chen, P.C., Chua, S.J., and Low, T.S. see Chua, S.J.
Chen, T.C. Analysis and design of optical lowpass multilayer filters via noncommensurate to pseudocommensurate system transformation **J** p359
Chen, Y., Mahmoud, M.S., and Singh, M.G. see Mahmoud, M.S.
Chen, Y.C., Aplevich, J.D., and Wilson, W.J. Simultaneous estimation of state variables and parameters for multivariable linear systems with singular pencil models **D** p65
Cheng, L., and Billinton, R. see Billinton, R.
Cheng, Shi-jie, Malik, O.P., and Hope, G.S. Self-tuning stabiliser for a multimachine power system **C** p176
Chester, E.G., Sayers, I.L., and Kinniment, D.J. see Sayers, I.L.
Cheung, Y.S., Li, H.F., and Chiu, P.P.K. see Li, H.F.
Chicon, R., Martin, E., and Navarro, A. Analysis of electromagnetic systems by means of Fourier transform techniques **H** p248
Chinnadurai, R., and Kalyanasundaram, N. see Kalyanasundaram, N.
Chiu, P.P.K., Li, H.F., and Cheung, Y.S. see Li, H.F.
Choi, Y.I., Kim, C.K., and Kwon, Y.S. Taper etching of the thermal oxide layer **I** p13
Choo, E., Brazil, T., El-Rabaie, S., Fusco, V., and Stewart, C. see Brazil, T.
Chotai, A., and Owens, D.H. see Owens, D.H.
Chow, Y.L., and She, X.Y. see She, X.Y.
Chramiec, J., and Glass, A.M. Analysis of microstrip slotline ring 3dB directional couplers **H** p187
Chrissoulidis, D.P., and Kriezis, E.E. EM-wave guidance by a highly conducting surface in uniform motion **H** p143
Chua, S.J., Low, T.S., and Chen, P.C. Comparison of current spreading in stripe contact semiconductor lasers **J** p299
Chughtai, M.A., and Green, D.H. see Green, D.H.
Chung, G.P., Lee, H.-M., Geller, D., and Haklay, B. see Lee, H.-M.
Ciminiera, L., Serra, A., and Valenzano, A. Partitioned array for stable matrix triangularisation **E** p45
Claassen, M., Freyer, J., and Guettich, U. see Freyer, J.
Clark, A.P., and Harun, R. Assessment of Kalman-filter channel estimators for an HF radio link **F** p513
Clark, D.F., Wong, K.K., Nutt, A.C.G., Winfield, J., Laybourn, P.J.R., and De La Rue, R.M. see Wong, K.K.
Clarke, E.M., and Dill, D.L. see Dill, D.L.
Clarke, R.J., and Cham, W.K. see Cham, W.K.
Clarke, S.L.H., Hooper, D.E., Clement-Jones, J., and Taylor, G.N. From new technologies to profitable products **A** p71
Clement-Jones, J., Clarke, S.L.H., Hooper, D.E., and Taylor, G.N. see Clarke, S.L.H.
Climer, B. Modes on a four-conductor line **H** p392
Cloud, D.J., and Kouvaritakis, B. Statistical bounds on multivariable frequency response: an extension of the generalised Nyquist criterion **D** p97
Coakley, F.P., Evans, B.G., El-Amin, M.H.M., Lu, S.C., and Wong, C.W. see Evans, B.G.
Cohen, I.H., Hamilton-Price, P.G., Read, R.F., Goodsell, D.J., Mulder, J., and Campbell, D.S. see Hamilton-Price, P.G.
Cohen, S.A. Adaptive variable update rate algorithm for tracking targets with a phased array radar **F** p277
Cole, R.S., Medeiros Filho, F.C., and Sarma, A.D. see Medeiros Filho, F.C.
Collings, N., and Lindstrom, P. Computer simulation of hybrid cross-correlators **J** p31
Collins, J.H. Address as Chairman of the IEE Electronics Division: 'Silicon Glen' — myth or reality? **F** p2
Constantinides, A.G., Morris, O.J., and Lee, M. de J. see Morris, O.J.
Cook, V. Fundamental aspects of fault location algorithms used in distance protection **C** p359
Cooper, I.R., Nicholson, M.G., and Petts, C.R. Dynamic frequency plane correlator **J** p70
Cornbleet, S. Thin dielectric lens reflector **H** p288
Cornbleet, S., and Smith, G. Dual reflector antennas with amplitude, phase or Abbé conditions **H** p221
Cory, B.J., and Degtyarev, V.N. see Degtyarev, V.N.
Cozens, J.R., and Arambepola, S.L. see Arambepola, S.L.
Cristescu, D., Gary, C., Garabedian, R., Zhang, Z., and Enache, R. see Gary, C.
Crompton, A.B., Binns, D.F., and Jaberansari, A. see Binns, D.F.
Cudd, P.A., Benson, F.A., and Sitch, J.E. Prediction of leakage from single braid screened cables **A** p144
Cullen, A.L., and Xu, J.D. Quasi-optical seven-port reflectometer for millimetre waves **H** p455
Cullen, A.L., and Yeo, S.P. Six-port reflectometer theory for symmetrical five-port junction with directional coupler **H** p277
Cummings, D., and Wildey, C.G. Military aeronautical satellite communications **F** p411
Czarnul, Z. Performance comparison of integrated continuous-time integrators containing matched MOS transistors **G** p203

D

D'Addio, E., and Farina, A. Overview of detection theory in multistatic radar **F** p613
Daeche, N., and Hanna, F.K. see Hanna, F.K.
Dagless, E.L., Kingswood, N., Belchamber, R.M., Betteridge, D., Lilley, T., and Roberts, J.D.M. see Kingswood, N.
Dale, B.G. Quality circles at work in an electrical engineering/electronic environment **A** p65
Damper, R.I., and Moore, W.R. see Moore, W.R.
Daniel, C.D. Concepts and techniques for real-time optical synthetic aperture radar data processing **J** p7
Daniel, R.W., Kouvaritakis, B., and Latchman, H. Principal direction alignment: a geometric framework for the complete solution to the μ-problem **D** p45
Darby, B.J, and Orton, D.W.R. Structured approaches to design **E** p123 **I** p83
da Rocha, J.R.F., and Pires, J.J.O. see Pires, J.J.O.
Davey, K.R., and Barnes, W.J. T-Ω technique applied to three-dimensional eddy current problems using the boundary integral equation **B** p359
Davidson, E.G. Control of hydro-electric plant **C** p145
Davies, A.J. Discharge simulation (Commissioned IEE review) **A** p217
Davies, D.E.N., Karavassilis, N., and Guy, C.G. see Karavassilis, N.
Davies, P.A., and Sherif, M. Use of pseudo-error monitoring schemes in optical communications **J** p371
Davies, P.G., and Lane, J.A. Review of propagation characteristics and prediction for satellite links at frequencies of 10–40 GHz **F** p420
Davis, B.R., and Bogner, R.E. see Bogner, R.E.
Davis, R.G., Barlow, P.S., and Lazarus, M.J. see Barlow, P.S.
Debney, B.T., Holden, A.J., King, J.P., Metcalfe, J.G., and Oxley, C.H. see Holden, A.J.
de Fornel, B., Barlaud, M., Gauvrit, M., and Requier, J.P. see Barlaud, M.
De La Rue, R. Optical signal processing (Editorial) **J** p1
De La Rue, R.M., Wong, K.K., Nutt, A.C.G., Clark, D.F., Winfield, J., and Laybourn, P.J.R. see Wong, K.K.
De La Rue, R.M., and Singh, J. see Singh, J.
de la Sen, M. A model reference adaptive control system for discrete multivariable bilinear systems with interconnected subsystems **D** p165
de Lima, F.N., and Naidu, S.R. see Naidu, S.R.
de Oliveira, J.C., and Yacamini, R. see Yacamini, R.
DeVore, R.V., and Bohley, E.P. RF power injected into the DC yard by an HVDC convertor pole **C** e80
Degtyarev, V.N., and Cory, B.J. Determination of stabiliser settings in multimachine power systems **C** p308
Deliyannis, T., and Anastassopoulos, V. see Anastassopoulos, V.
Deliyannis, T., and Fotopoulos, S. see Fotopoulos, S.
Dennis, W.M., and Blau, W. Soluble Polydiacetylenes for picosecond nonlinear optical phase conjugation **J** p91
Densem, T.J., Arrillaga, J., Acha, E., and Bodger, P.S. see Arrillaga, J.
Detlefsen, J. Application of multistatic radar principles to short-range imaging **F** p658
Dey, M.N., Penman, J., Tait, A.J., and Bryan, W.E. see Penman, J.
Dib, H.M., Shieh, L.S., and Yates, R.E. see Shieh, L.S.
Dietrich, M., Mosch, W., Lemke, E., and Hauschild, W. see Mosch, W.
Dill, D.L., and Clarke, E.M. Automatic verification of asynchronous circuits using temporal logic **E** p276
Dixon, P., and Smallwood, R.H. see Smallwood, R.H.
Doany, P., and Gott, G.F. Theoretical performance of an adaptive frequency-hopping modem at HF **F** p470
Dorey, A.P. Editorial: Systems on silicon **E** p105 **I** p65
Douce, J.L. A note on frequency-response measurement **D** p189
Dow, A.B., Cameron, J.R., and Thomson, W.T. see Cameron, J.R.
Drury, W., Brown, J.E., Jones, B.L., and Vas, P. see Brown, J.E.
Duersch, R.R., Kolavennu, V.R., Rappaport, S.S., Lester, H.L., and Puckette, C.M. see Kolavennu, V.R.
Duffy, M.C. The electric power industry and exemplary techniques **A** p159
Dunford, W.G., and Mirbod, S.A. see Mirbod, S.A.
Dunnett, R.M., Khodaverdian, E., and Brameller, A. see Khodaverdian, E.
Durkin, J., and Withers, D.J. WARC-ORB(1) and the international regulation of satellite communications **F** p364
Dwek, M.D., and Norris, T.E. see Norris, T.E.
Dyott, R.B. Some memories of the early years with optical fibres at the British Post Office: a personal account **J** p199

E

Eastham, J.F., and Evans, P.D. see Evans, P.D.
Eden, R., Goodlad, A., Leach, G., Henney, A., and Vicars-Miles, A.E. see Goodlad, A.
Eichmann, G., and Roytman, L.M. New algorithm for transient suppression for images due to incomplete or partial boundary data **G** p27
Ekwue, A.O. Economics and reliability of supply of developing power systems **C** p373
El-Agamy, M.A., and Munday, E. Reduced search soft-decision minimum-distance decoding for binary block codes **F** p34
El-Amin, M.H.M., Evans, B.G., Coakley, F.P., Lu, S.C., and Wong, C.W. see Evans, B.G.
El-Awadi, R.M., El-Khamy, S.E., and El-Sharawy, E.A. see El-Khamy, S.E.
El-Din Mahmoud, M.M., and Johns, A.T. see Johns, A.T.
El-Geneidy, M., and El-Kashlan, A. see El-Kashlan, A.
El-Kady, M.A., Anders, G.J., Ganton, R.W.D., Horrocks, D.J., and Motlis, J. see Anders, G.J.
El-Kashlan, A., and El-Geneidy, M. On decentralised eigenvalue assignment for large-scale systems with dynamic interconnections **D** p121
El-Khamy, S.E., El-Awadi, R.M., and El-Sharawy, E.A. Simple analysis and design of annular ring microstrip antennas **H** p198
El-Metwally, M.M., El-Sobki, S.M., and Farrag, M.A. see El-Sobki, S.M.
El-Morshedy, A., Zeitoun, A.G., and Ghourab, M.M. Modelling of substation grounding grids **C** p287
El-Rabaie, S., Brazil, T., Choo, E., Fusco, V., and Stewart, C. see Brazil, T.
El-Sayed, M.L., Sharaf, S.M.Z., Hogg, B.W., and Abdalla, O.H. see Sharaf, S.M.Z.
El-Sharawy, E.A., El-Khamy, S.E., and El-Awadi, R.M. see El-Khamy, S.E.
El-Sobki, S.M., El-Metwally, M.M., and Farrag, M.A. New approach for planning high-voltage transmission networks **C** p256
Enache, R., Gary, C., Garabedian, R., Zhang, Z., and Cristescu, D. see Gary, C.
Engelmann, R., and Kerps, D. see Kerps, D.
Englefield, C.G., Prystajecky, A.H., and Goud, P.A. see Prystajecky, A.H.
Ephraim, Y., and Malah, D. Combined enhancement and adaptive transform coding of noisy speech **F** p81 **F** e137
Er, M.H., and Cantoni, A. Transformation of linearly constrained broadband processors to unconstrained partitioned form **H** p209
Eriksson, A.J., le Roux, B.C., Geldenhuys, H.J., and Meal, D.V. Study of airgap breakdown characteristics under ambient conditions of reduced air density **A** p485
Eris, E., and Muzio, J.C. Spectral testing of circuit realisations based on linearisations **E** p73
Ertan, H.B. Analytical prediction of torque and inductance characteristics of identically slotted doubly-salient reluctance motors **B** p230
Evans, B.G., Coakley, F.P., El-Amin, M.H.M., Lu, S.C., and Wong, C.W. Baseband switches and transmultiplexers for use in an on-board processing mobile/business satellite system **F** p356
Evans, P.D., and Eastham, J.F. Disc geometry single-phase alternator with slotless stator and AC-side excitation **B** p270
Evans, P.D., and Hill-Cottingham, R.J. DC link current in PWM inverters **B** p217
Evans, P.D., and Saied, B.M. Calculation of effective inductance of gapped core assemblies **B** p41
Eveking, H. Editorial: Digital design verification **E** p241
Everard, J.K.A. Low-noise power-efficient oscillators: theory and design **G** p172

F

Fagan, A.D., and O'Keane, F.D. Performance comparison of detection methods derived from maximum-likelihood sequence estimation **F** p535
Fair, R.I., Chandler, J.A., Hinch, L.W., Hughes, D.A., Peraino, J., and Rowe, P.W. see Chandler, J.A.
Fairhead, A.C., and Johnston, J.A. see Johnston, J.A.
Fan, Desen Analysis of two-dimensional circular-cylinder-array scatterers **H** p322
Fang, B.C., Chang, C.Y., Wang, Y.D., and Tzeng, F.C. see Chang, C.Y.
Farhat, K.S., and Bennett, J.C. Antenna near-field measurements using directive probes **H** p26
Farina, A. Tracking function in bistatic and multistatic radar systems **F** p630
Farina, A., Hanle, E., and Pell, C. see Hanle, E.
Farina, A., Russo, A., and Studer, F.A. Coherent radar detection in log-normal clutter **F** p39
Farina, A., and D'Addio, E. see D'Addio, E.
Farish, O., Bektas, S.I., and Hizal, M. see Bektas, S.I.
Farrag, M.A., El-Sobki, S.M., and El-Metwally, M.M. see El-Sobki, S.M.
Farsi, M., Warwick, K., and Guilandoust, M. Stable reduced-order models for discrete-time systems **D** p137
Faruqui, M.N., and Krishnasami, P. see Krishnasami, P.
Feeney, M.T., Adachi, F., Williamson, A.G., and Parsons, J.D. see Adachi, F.
Feher, K., and Mathiopoulos, P. see Mathiopoulos, P.
Feher, K., and Wu, K.-T. see Wu, K.-T.
Feijóo, S., and Hernández, C. Automatic determination of tone period and evaluation of dysphony in pathological voices **A** p99
Finch, J.W. Magnetic permeance of aligned doubly salient structures **B** p365
Fischer, D. Interior Lighting (Commissioned IEE review) **B** p115
Foote, P.D., Hall, T.J., Aldridge, N.B., and Levenston, A.G. Photorefractive materials and their applications in optical image processing **J** p83
Ford, A.E.W., and Richardson, J. see Richardson, J.
Forrest, J.R., and Sheehan, P.G. see Sheehan, P.G.
Fortes, J.M.P. Assignment of channels and polarisations in a broadcasting satellite service environment **F** p370
Fossi, S., Bedini, L., and Reggiannini, R. see Bedini, L.
Foster, E.N., and Parker, F.J. Hydro-electric machines **C** p126
Fotopoulos, S., and Deliyannis, T. Multiple-loop-feedback switched-capacitor filters using approximating biquads **G** p84
Fox, B., and Bond, S.D. see Bond, S.D.
Fox, J. Cell-based design: a review **E** p117 **I** p77
Fox, M., Plessner, K.W., and Stannard-Powell, S.J. Possible model for the degradation due to hydrogen of multimode fibre **J** p129
Franceschetti, G., and Mohsen, A. Recent developments in the analysis of reflector antennas. A review **H** p65
Francis, N.W. Systems engineering approach to the major capital projects in BP **A** p338
Freeman, E.M., Rajanathan, C.B., and Lowther, D.A. see Rajanathan, C.B.
Fregien, G., Bendien, J.Ch., and van Wyk, J.D. see Bendien, J.Ch.
Freris, L.L., and Tsitsovits, A.J. see Tsitsovits, A.J.
Freyer, J., Guettich, U., and Claassen, M. Elimination of surface current induced failure in millimetre-wave Baritt diodes **I** p25
Fujii, Y., and Hussey, C.D. Design considerations for circularly form-birefringent optical fibres **J** p249
Fujita, M., Kono, S., Tanaka, H., and Moto-Oka, T. Aid to hierarchial and structured logic design using temporal logic and Prolog **E** p283
Fukushima, K. Modulational instability in a nonlinear transmission line **A** p261
Fusco, V., Brazil, T., El-Rabaie, S., Choo, E., and Stewart, C. see Brazil, T.

G

Gaafar, M.Y., Moustafa, K.A.F., and Abu-El-Yazid, T. see Moustafa, K.A.F.
Gallagher, D.F.G., Carroll, J.E., and White, I.H. see Carroll, J.E.
Gallet, G., and Tellier, R. see Tellier, R.
Gambling, W.A. Optical fibres: the Southampton scene **J** p205
Ganton, R.W.D., Anders, G.J., El-Kady, M.A., Horrocks, D.J., and Motlis, J. see Anders, G.J.
Garabedian, R., Gary, C., Zhang, Z., Cristescu, D., and Enache, R. see Gary, C.
Garba, A.I., and Mouftah, H.T. see Mouftah, H.T.
Garrett, B., and Whiteaway, J.E.A. Optimisation of four- and five-layer $Al_xGa_{1-x}As/GaAs$ large optical cavity lasers for high power, low threshold current density operation **J** p319
Gary, C., Garabedian, R., Zhang, Z., Cristescu, D., and Enache, R. Breakdown characteristics of insulator strings stressed by short tail waves **A** p552
Gatenby, P.V., and Wilby, W.A. see Wilby, W.A.
Gauvrit, M., Barlaud, M., de Fornel, B., and Requier, J.P. see Barlaud, M.
Gaydon, B.G., Tavner, P.J., and Ward, D.M. see Tavner, P.J.
Geldenhuys, H.J., Eriksson, A.J., le Roux, B.C., and Meal, D.V. see Eriksson, A.J.
Geller, D., Lee, H.-M., Chung, G.P., and Haklay, B. see Lee, H.-M.
George, R.G., and Barry, J.N. see Barry, J.N.
Georgiev, V.I., and Stantchev, K.P. State-space switched capacitor filter design based on single-operational-amplifier biquads **G** p251
Georgiou, G., and Boucouvalas, A.C. see Boucouvalas, A.C.
Georgoudis, E.C., and Lagoyannis, D. Short-time spectrum analyser based on delta-sigma modulation **G** p295
Gerasimov, Yu.A., and Aleksandrov, G.N. see Aleksandrov, G.N.

Ghosh, R.K., and Bhattacharjee, G.P. Parallel algorithm for shortest paths **E** p87
Ghourab, M.M., El-Morshedy, A., and Zeitoun, A.G. see El-Morshedy, A.
Girgis, G.A., and Bastawros, A. Nondestructive metal sheet testing using the phase angle of the electromagnetic fields **A** p137
Glaser, J.I. Fifty years of bistatic and multistatic radar **F** p596
Glass, A.M., and Chramiec, J. see Chramiec, J.
Gönen, T., and Ramirez-Rosado, I.J. Review of distribution system planning models: a model for optimal multistage planning **C** p397
Goldberg, M., and Sun, H.-F. Image sequence coding by three-dimensional block vector quantisation **F** p482
Goodlad, A., Eden, R., Leach, G., Henney, A., and Vicars-Miles, A.E. An energy strategy for the UK **A** p311
Goodman, C.J., Ahmed, M.M., Taufiq, J.A., and Lockwood, M. see Ahmed, M.M.
Goodman, C.J., Taufiq, J.A., and Mellitt, B. see Taufiq, J.A.
Goodsell, D.J., Hamilton-Price, P.G., Read, R.F., Mulder, J., Campbell, D.S., and Cohen, I.H. see Hamilton-Price, P.G.
Goody, J.L.H. Overcoming problems associated with impedance measurement in pole slipping protection for Dinorwig **C** p44
Gordon, M.J.C., and Herbert, J. Formal hardware verification methodology and its application to a network interface chip **E** p255
Goto, N., and Tsunoda, Y. see Tsunoda, Y.
Gott, G.F., and Doany, P. see Doany, P.
Goud, P.A., Prystajecky, A.H., and Englefield, C.G. see Prystajecky, A.H.
Gough, P.T., Moutter, S.P., and Bodger, P.S. see Moutter, S.P.
Graham, R.K., Westcott, B.S., and Wolton, I.C. see Westcott, B.S.
Gray, C.B., and Singh, P.N.P. Differential protection of multi-ended circuits **C** p59
Green, D.H., and Chughtai, M.A. Use of multiplexers in direct synthesis of ASM-based designs **E** p194
Grieve, M.D., Penman, J., and Wilson, A.F. see Penman, J.
Grieve, M.D., and Penman, J. see Penman, J.
Griffiths, H.D., and Long, N.R.W. Television-based bistatic radar **F** p649
Grimble, M.J. Controllers for LQG self-tuning applications with coloured measurement noise and dynamic costing **D** p19
Grimble, M.J. Observations-weighted minimum-variance control of nonlinear systems **D** p172
Grimsdale, R.L., Sheya, M.S., and Riley, C. see Sheya, M.S.
Guettich, U., Freyer, J., and Claassen, M. see Freyer, J.
Guilandoust, M., Farsi, M., and Warwick, K. see Farsi, M.
Guile, A.E., Latham, R.V., and Heylen, A.E.D. Similarities between electron emission and consequent breakdown processes in high-pressure gases and in vacuum **A** p280
Gupta, M.M., Minamide, N., and Nikiforuk, P.N. see Minamide, N.
Guy, C.G., Karavassilis, N., and Davies, D.E.N. see Karavassilis, N.

H

Habbab, I.M.I., and Turner, L.F. New class of *M*-ary communication systems using complementary sequences **F** p293
Habbab, I.M.I., and Turner, L.F. Performance of a new class of binary communication systems **F** p301
Habib, S.E.-D., and Khalifa, M. A new monitor for pollution on power line insulators. Part 1: Design, construction and preliminary tests **C** p105
Hadjifotiou, A., and Hill, G.A. Suppression of stimulated Brillouin backscattering by PSK modulation for high-power optical transmission **J** p256
Haklay, B., Lee, H.-M., Chung, G.P., and Geller, D. see Lee, H.-M.
Halbwachs, N., Amblard, P., and Caspi, P. see Amblard, P.
Hall, C.M., James, J.R., and Andrasic, G. see James, J.R.
Hall, P.S. Multioctave bandwidth log-periodic microstrip antenna array **H** p127
Hall, T.J., Foote, P.D., Aldridge, N.B., and Levenston, A.G. see Foote, P.D.
Ham, P.A.L. Trends and future scope in the monitoring of large steam turbine generators **B** p164
Hamer, M.F. First-order parameter extraction on enhancement silicon MOS transistors **I** p49
Hamilton-Price, P.G., Read, R.F., Goodsell, D.J., Mulder, J., Campbell, D.S., and Cohen, I.H. Electronic component quality **A** p369
Hammersley, H. Design and development of public distribution supply systems **C** p370
Hanle, E. Survey of bistatic and multistatic radar **F** p587
Hanle, E., Farina, A., and Pell, C. Bistatic/multistatic radar bibliography **F** p664
Hanle, E., and Pell, C. see Pell, C.
Hanna, F.K., and Daeche, N. Specification and verification of digital systems using higher-order predicate logic **E** p242
Harley, R.G., Jennings, G.D., and Levy, D.C. see Jennings, G.D.
Harris, L.N., and O'Connor, P.D.T. see O'Connor, P.D.T.
Harris, S.L., and Bezanson, L.W. see Bezanson, L.W.
Harry, J.E., and Knight, R. Multiple electric discharges **A** p50
Hart, A.D., Baillie, W.L., Openshaw, P.M., and Makh, S.S. see Baillie, W.L.
Hart, A.D., Makh, S.S., Openshaw, P.M., and Baillie, W.L. see Makh, S.S.
Hart, P.M. Characterising the power system at a load busbar by measurement **C** p87
Harun, R., and Clark, A.P. see Clark, A.P.
Hatori, M., Kohno, R., Pasupathy, S., and Imai, H. see Kohno, R.
Hauschild, W., Mosch, W., Dietrich, M., and Lemke, E. see Mosch, W.
Hauth, W. Accurate analysis of latching phase shifters **H** p165
Hayashi, I. Research aiming for future optoelectronic integration. The Optoelectronics Joint Research Laboratory **J** p237
Hayashi, Y., Kitazawa, T., and Mittra, R. see Kitazawa, T.
Hayashi, Y., and Kitazawa, T. see Kitazawa, T.
Haykin, S., and Thomas, P. see Thomas, P.
Headley, A., Burdis, E.P., and Kelsey, T. Application of protective devices to radial overhead line networks **C** p437
Heasell, E.L., Meglicki, Z., and Nassibian, A.G. see Meglicki, Z.
Heaton, A.G., and Bickford, J.P. see Bickford, J.P.
Hecht, V., Scheiding, W., Thoma, M., Rosen, W., and Schügerl, K. see Scheiding, W.
Heckmann, D., Arndt, F., Bornemann, J., Piontek, C., Semmerow, H., and Schueler, H. see Arndt, F.
Heckmann, D., Arndt, F., Semmerow, H., Bornemann, J., and Vahldieck, R. see Arndt, F.
Helszajn, J., and Sharp, J. Dielectric and permeability effects in $HE_{11\delta}$ open demagnetised ferrite resonators **H** p271
Henderson, I.A., and McGhee, J. Arbitrary space charge to bulk boundary model of Auger recombination for semiconductor power diodes **I** p169
Henderson, I.A., and McGhee, J. Modelling gamma-source backscatter density gauges **A** p611
Henney, A., Goodlad, A., Eden, R., Leach, G., and Vicars-Miles, A.E. see Goodlad, A.
Hente, D., and Jansen, R.H. Frequency domain continuation method for the analysis and stability investigation of nonlinear microwave circuits **H** p351
Herbert, J., and Gordon, M.J.C. see Gordon, M.J.C.
Hernández, C., and Feijóo, S. see Feijóo, S.
Hertz, D., Jury, E.I., and Zeheb, E. Reply to comments on a simplified analytical stability test for systems with delay **D** d142
Heylen, A.E.D., Guile, A.E., and Latham, R.V. see Guile, A.E.
Hill, G.A., and Hadjifotiou, A. see Hadjifotiou, A.
Hill-Cottingham, R.J., and Evans, P.D. see Evans, P.D.
Hilliar, R.A., Jackson, R.J., Ward, D.A., and Bennett, R.B. Measurements of the currents flowing in the stator frame of a 500 MW turbogenerator **C** p16
Hinch, L.W., Chandler, J.A., Fair, R.I., Hughes, D.A., Peraino, J., and Rowe, P.W. see Chandler, J.A.
Hinch, L.W., Chandler, J.A., Hughes, D.A., McDowell, D.M., Rowe, P.W., and Wood, A.B. see Chandler, J.A.
Hindmarch, R.T., and Wood, J.W. see Wood, J.W.
Hisada, T., Kawamura, T., Matsumoto, T., and Ishii, M. see Kawamura, T.
Hitchins, D.K. Managing system creation **A** p343
Hizal, M., Bektas, S.I., and Farish, O. see Bektas, S.I.
Ho, P.K.M., and McLane, P.J. Power spectral density of digital continuous phase modulation with correlated data symbols. Part 1: Autocorrelation function method **F** e214
Ho, P.K.M., and McLane, P.J. Power spectral density of digital continuous phase modulation with correlated data symbols. Part 2: Rowe-Prabhu method **F** p106 **F** e214
Hobson, L., and Al-Shaikhli, A.K.M. see Al-Shaikhli, A.K.M.
Hockham, G.A., and Kao, K.C. see Kao, K.C.
Hoefer, W.J.R., and Vahldieck, R. see Vahldieck, R.
Hogg, B.W., Sharaf, S.M.Z., Abdalla, O.H., and El-Sayed, M.L. see Sharaf, S.M.Z.
Holden, A.J., Debney, B.T., King, J.P., Metcalfe, J.G., and Oxley, C.H. Matching of GaAs power FETs using a large-signal modelling technique **H** p399
Holden, A.J., and Oxley, C.H. see Oxley, C.H.
Hooper, D.E., Clarke, S.L.H., Clement-Jones, J., and Taylor, G.N. see Clarke, S.L.H.
Hope, G.S., Cheng, Shi-jie, and Malik, O.P. see Cheng, Shi-jie
Horno, M., and Marques, R. see Marques, R.
Horrocks, D.J., Anders, G.J., El-Kady, M.A., Ganton, R.W.D., and Motlis, J. see Anders, G.J.
Howes, M.J., McKenzie, W., Barry, D.M., and Snowden, C.M. see McKenzie, W.
Howson, D.P., and Mahmoud, M.S. Electronic tuning of high-Q VHF cavity resonators **H** p159
Hsu, Y.S., and Lorti, D.C. Spaceborne bistatic radar — an overview **F** p642
Hudson, J.E. Dynamic allocation of degrees of freedom in an adaptive antenna **H** p34
Hudson, J.E. Fast allocation of degrees of freedom in an adaptive antenna **H** p507
Hudson, N.R., Ifeachor, E.C., Jervis, B.W., Morris, E.L., and Allen, E.M. see Ifeachor, E.C.
Hughes, D.A., Chandler, J.A., Hinch, L.W., Fair, R.I., Peraino, J., and Rowe, P.W. see Chandler, J.A.
Hughes, D.A., Chandler, J.A., Hinch, L.W., McDowell, D.M., Rowe, P.W., and Wood, A.B. see Chandler, J.A.
Hughes, J.R. Contrast variations in high-level multiplexed twisted nematic liquid-crystal displays **I** p145
Huijs, C., van Sinderen, M., and Blaauw, G.A. see van Sinderen, M.
Hujanen, A.T., Alanen, E., and Lindell, I.V. see Alanen, E.
Humpage, W.D., and Nguyen, T.T. Developments in phase-variable modelling for thyristor-controlled reactive-power compensators **C** p277
Hunter, J.J., and Titchener, M.R. see Titchener, M.R.
Hussey, C.D., and Fujii, Y. see Fujii, Y.

I

Ibrahim, B.M., and Al-Hussaini, E.K. see Al-Hussaini, E.K.
Iddin, A.D., Plessner, K.W., Stannard-Powell, S.J., and White, C.J. see Plessner, K.W.
Ifeachor, E.C., Jervis, B.W., Morris, E.L., Allen, E.M., and Hudson, N.R. A new microcomputer-based online ocular artefact removal (OAR) system **A** p291
Iida, M., Supadech, S., Okazaki, S., Akiba, Y., and Kurosu, T. see Supadech, S.
Imai, H., Kohno, R., Pasupathy, S., and Hatori, M. see Kohno, R.
Ince, A.N., and Schemel, R.E. Factors affecting use and design of spread-spectrum modems for the HF band **F** p187
Ingram, D.G.W., and Takawira, F. see Takawira, F.
Irwin, G.W., Monteith, W., and Beattie, W.C. Statistical electricity demand modelling from consumer billing data **C** p328
Irwin, G.W., and Roddy, D.J. see Roddy, D.J.
Ishii, M., Kawamura, T., Matsumoto, T., and Hisada, T. see Kawamura, T.
Islam, S., and Carroll, J.E. Warped-mode multiway combline directional couplers **H** p81
Ismail, K.S., and Broadway, A.R.W. see Broadway, A.R.W.
Ismail, R., and Amaratunga, G.A.J. see Amaratunga, G.A.J.
Ito, K., Itoh, K., and Kogo, H. Improved design of series-fed circularly polarised printed linear arrays **H** p462
Ito, M.R., and Szeliski, R. see Szeliski, R.
Itoh, K., Ito, K., and Kogo, H. see Ito, K.
Iyengar, B.S.R., Biswas, S.K., and Mahesh, M.S. see Biswas, S.K.

J

Jaberansari, A., Binns, D.F., and Crompton, A.B. see Binns, D.F.
Jaberansari, A., Binns, D.F., and Crompton, A.B. see Binns, D.F.
Jack, A.G., and Mecrow, B.C. Computation and validation against measurements of stator end-region fields in synchronous generators **C** p26
Jackson, M.C. The geometry of bistatic radar systems **F** p604
Jackson, R.J., Hilliar, R.A., Ward, D.A., and Bennett, R.B. see Hilliar, R.A.
Jackson, R.J., Wilson, A., and Wang, N. see Wilson, A.
Jacob, A., Burkert, E., Brauns, H., and Schünemann, K. Dynamic transfer properties of frequency multipliers **H** p175
Jain, S.C., Totterdell, D.H.J., and Leake, J.W. see Totterdell, D.H.J.
James, J.R., Hall, C.M., and Andrasic, G. Microstrip elements and arrays with spherical dielectric overlays **H** p474
Jansen, R.H., and Hente, D. see Hente, D.
Jen, C.-W., Jou, S.-J., Shen, W.-Z., and Lee, C.-L. see Jou, S.-J.
Jennings, G.D., Harley, R.G., and Levy, D.C. Subsynchronous resonance of a power station with two identical generation units **C** p33

Jensen, J.M., and Reed, I.S. Bounded distance coset decoding of convolutional codes F p488
Jervis, B.W., Ifeachor, E.C., Morris, E.L., Allen, E.M., and Hudson, N.R. see Ifeachor, E.C.
Jeung, Y.C. Novel dynamic random access memory cell using three diodes I p61
Johns, A.T., and El-Din Mahmoud, M.M. New approach to ultra-high-speed phase selection in single-pole autoreclosure schemes C p188
Johns, P.B. Use of condensed and symmetrical TLM nodes in computer-aided electromagnetic design H p368
Johnson, F.G. Hydro-electric power in the UK: past performance and potential for future development C p110
Johnson, P.M., Whittington, H.W., Jordan, J.R., and Paterson, N. see Whittington, H.W.
Johnston, J.A., and Fairhead, A.C. Waveform design and Doppler sensitivity analysis for nonlinear FM chirp pulses F p163
Jones, B.L., Brown, J.E., Drury, W., and Vas, P. see Brown, J.E.
Jordan, J.R. Correlation algorithms, circuits and measurement applications (Commissioned IEE review) G p58 G d255
Jordan, J.R., Kiani-Shabestari, B., and Napthine, M. Microprocessor based polarity correlation using the skip algorithm G p227
Jordan, J.R., Whittington, H.W., Paterson, N., and Johnson, P.M. see Whittington, H.W.
Jou, S.-J., Jen, C.-W., Shen, W.-Z., and Lee, C.-L. MOTA: a MOSFET timing simulator I p193
Judah, S.K., and Judd, M.D. Direct synthesis of the matched symmetric five-port junction from its scattering matrix H p95
Judd, M.D., and Judah, S.K. see Judah, S.K.
Juhasz, C., and Chan, A.Y.C. see Chan, A.Y.C.
Jury, E.I., Hertz, D., and Zeheb, E. see Hertz, D.

K

Kagoshima, K., Ando, M., and Kondo, A. see Ando, M.
Kajfez, D., Wheless, W.P., and Ward, R.T. Influence of an airgap on the measurement of dielectric constant by a parallel-plate dielectric resonator H p253 H e340
Kak, S.C. Secret-hardware public-key cryptography E p94
Kalyanasundaram, N., and Chinnadurai, R. Large-signal field analysis of an O-type travelling wave amplifier. Part 2: Numerical results I p163
Kamarei, M., Baribaud, M., and Caerou, J.C. see Baribaud, M.
Kao, C.K. 10^{12} bit/s optoelectronics technology J p230
Kao, K.C., and Hockham, G.A. Dielectric-fibre surface waveguides for optical frequencies J p191
Karavassilis, N., Davies, D.E.N., and Guy, C.G. Experimental HF circular array with direction finding and null steering capabilities H p147
Karbowiak, A.E. The birth of optical communications J p202
Karthikeyan, C. Directional response of a towed array in shallow sea F p138
Kawamura, T., Matsumoto, T., Ishii, M., and Hisada, T. Evaluation of space-charge behaviour in long airgap using Pockels' cells A p573
Kekkeris, G.T. On the analysis of singular systems using orthogonal functions D p315
Kellenberger, W. Developments in hydro-electric generator components C p137
Kelsey, T., Headley, A., and Burdis, E.P. see Headley, A.
Kemhadjian, H.A. Editorial I p201
Kennedy, M.P., and Lacy, J.G. see Lacy, J.G.
Kerps, D., and Engelmann, R. Control of astigmatism in proton isolated stripe AlGaAs double heterostructure lasers J p267
Khalifa, M., and Habib, S.E.-D. see Habib, S.E.-D.
Khodaverdian, E., Brameller, A., and Dunnett, R.M. Semi-rigorous thermal unit commitment for large scale electrical power systems C p157
Kiani-Shabestari, B., Jordan, J.R., and Napthine, M. see Jordan, J.R.
Kim, C.K., Choi, Y.I., and Kwon, Y.S. see Choi, Y.I.
Kimpan, C., Thajchayapong, P., and Rungsunseri, Y. see Thajchayapong, P.
King, J.P., Holden, A.J., Debney, B.T., Metcalfe, J.G., and Oxley, C.H. see Holden, A.J.
King, R.A., and McLernon, D.C. see McLernon, D.C.
Kingsbury, N.G. Transmit and receive filters for QPSK signals to optimise the performance on linear and hard-limited channels F p345
Kingswood, N., Dagless, E.L., Belchamber, R.M., Betteridge, D., Lilley, T., and Roberts, J.D.M. Image reconstruction using the transputer E p139 I p99
Kinniment, D.J., Sayers, I.L., and Chester, E.G. see Sayers, I.L.
Kinniment, D.J., and Liesenberg, H.K.E. see Liesenberg, H.K.E.
Kirkby, C.J.G., and Bennion, I. Organic photochromics for spatial light modulation J p98
Kirpa, A.I., Veselov, G.I., and Platonov, N.I. see Veselov, G.I.
Kinniment, D.J., Sayers, I.L., and Chester, E.G. see Sayers, I.L.
Kinniment, D.J., and Liesenberg, H.K.E. see Liesenberg, H.K.E.
Kirkby, C.J.G., and Bennion, I. Organic photochromics for spatial light modulation J p98
Kirpa, A.I., Veselov, G.I., and Platonov, N.I. see Veselov, G.I.
Kishk, A.A., and Shafai, L. Numerical solution of scattering from coated bodies of revolution using different integral equation formulations H p227
Kitazawa, T., Hayashi, Y., and Mittra, R. Asymmetrical coupled coplanar-type transmission lines with anisotropic substrates H p265
Kitazawa, T., and Hayashi, Y. Quasistatic characteristics of a coplanar waveguide with thick metal coating H p18
Klemm, R. Multiplier-free filters for ground clutter suppression F p12
Knight, R., and Harry, J.E. see Harry, J.E.
Ko, C.C. Adaptive array processing using the Davies beamformer H p467
Kobe, M.U., and Tsoi, A.C. Modelling of domestic hot-water heater load from online operating records and some applications C p336
Kogo, H., Ito, K., and Itoh, K. see Ito, K.
Kohno, R., Pasupathy, S., Imai, H., and Hatori, M. Combination of cancelling intersymbol interference and decoding of error-correcting code F p224
Kolavennu, V.R., Rappaport, S.S., Duersch, R.R., Lester, H.L., and Puckette, C.M. Traffic performance characterisation of a personal radio-communication system F p550
Kondo, A., Ando, M., and Kagoshima, K. see Ando, M.
Kono, S., Fujita, M., Tanaka, H., and Moto-Oka, T. see Fujita, M.
Kooi, P.S., Leong, M.S., and Yeo, S.P. Circular cylindrical cavity loaded with a dielectric sleeve for Gunn-effect oscillator stabilisation application H p259
Kouadri, B., and Texier, C. see Texier, C.
Kouvaritakis, B., Daniel, R.W., and Latchman, H. see Daniel, R.W.
Kouvaritakis, B., and Cloud, D.J. see Cloud, D.J.
Kramer, J., Sloman, M., Magee, J., and Twidle, K. see Sloman, M.
Kramer, J., and Loques, O.G. see Loques, O.G.
Kriezis, E.E., and Antonopoulos, C.S. see Antonopoulos, C.S.
Kriezis, E.E., and Chrissoulidis, D.P. see Chrissoulidis, D.P.
Krishnamurthy, M.R., Ammasaigounden, N., and Subbiah, M. see Ammasaigounden, N.
Krishnan, R., Lindsay, J.F., and Arumugam, R. see Lindsay, J.F.
Krishnapur, R., Bharath Kumar, K., and Mondal, T.B. see Bharath Kumar, K.
Krishnasami, P., and Faruqui, M.N. Low-bit-rate encoder for picture signals using a centre-clipping quantiser F p68
Kuhlmann, W., Bellgardt, K.-H., Meyer, H.-D., Schügerl, K., and Thoma, M. see Bellgardt, K.-H.
Kung, F.-C., and Shih, D.-H. see Shih, D.-H.
Kurosu, T., Supadech, S., Okazaki, S., Akiba, Y., and Iida, M. see Supadech, S.
Kwon, Y.S., Choi, Y.I., and Kim, C.K. see Choi, Y.I.

L

Lacy, J.G., and Kennedy, M.P. Digital linear transducer using a dynamic RAM E p97
Lagoyannis, D., and Georgoudis, E.C. see Georgoudis, E.C.
Lamb, J.W., and Olver, A.D. Blockage due to subreflector supports in large radiotelescope antennas H p43
Lamba, S.S., and Nath, R. see Nath, R.
Lamnabhi, M. Functional analysis of nonlinear circuits: a generating power series approach H p375
Landsberg, P.T., and Adams, M.J. Recombination coefficients in low-dimensional systems, with special reference to long-wavelength quaternary lasers J p118
Lane, J.A., and Davies, P.G. see Davies, P.G.
Last, J.D., and Linsdall, D.K. Reception of Decca Navigator multipulse and zone identification transmissions by single-channel receivers F p463
Latchman, H., Daniel, R.W., and Kouvaritakis, B. see Daniel, R.W.
Latham, R.V., Guile, A.E., and Heylen, A.E.D. see Guile, A.E.
Lawrenson, P.J. Address as Chairman of the IEE Power Division: Ivory tower power B p1
Lawton, P., and Murphy, F.J. Hong Kong mass transit railway power supply system C p462
Laybourn, P.J.R., Wong, K.K., Nutt, A.C.G., Clark, D.F., Winfield, J., and De La Rue, R.M. see Wong, K.K.
Laybourn, P.J.R., and Adams, M.J. see Adams, M.J.
Laybourn, P.J.R., and Urquhart, W.P. see Urquhart, W.P.
Lazarus, M.J. Electromagnetic radiation: megahertz to gigahertz — A tribute to Heinrich Rudolf Hertz and John Turton Randall A p109
Lazarus, M.J., Barlow, P.S., and Davis, R.G. see Barlow, P.S.
Lea, R.M. SCAPE: a single-chip array processing element for signal and image processing E p145 I p105
Lea, R.M. VLSI and WSI associative string processors for structured data processing E p153 I p113
Leach, G., Goodlad, A., Eden, R., Henney, A., and Vicars-Miles, A.E. see Goodlad, A.
Leake, J.W., Totterdell, D.H.J., and Jain, S.C. see Totterdell, D.H.J.
Lebaron, J.P., Segui, A., and Leverge, R. see Segui, A.
Lee, C.-L., Jou, S.-J., Jen, C.-W., and Shen, W.-Z. see Jou, S.-J.
Lee, H.-M., Chung, G.P., Geller, D., and Haklay, B. H_{11} circular waveguide mode and back scattering cross-section along the axis of a thin walled tubular cylinder of finite length H p77
Lee, M. de J., Morris, O.J., and Constantinides, A.G. see Morris, O.J.
Leigh, J.R., Tarbuck, L.A., Ng, M.H., and Tampion, J. see Tarbuck, L.A.
Leigh, J.R., and Thoma, M. Control in bioprocessing (Editorial). J.R. Leigh and M. Thoma p. 193 D p193
Leitao, M.J., and Watson, P.A. Method for prediction of attenuation on earth-space links based on radar measurements of the physical structure of rainfall F p429
Lemke, E., Mosch, W., Dietrich, M., and Hauschild, W. see Mosch, W.
Lenoir, B., and Seeds, A.J. see Seeds, A.J.
Leonard, P.J., and Williamson, S. see Williamson, S.
Leong, M.S., Kooi, P.S., and Yeo, S.P. see Kooi, P.S.
le Roux, B.C., Eriksson, A.J., Geldenhuys, H.J., and Meal, D.V see Eriksson, A.J.
Lester, H.L., Kolavennu, V.R., Rappaport, S.S., Duersch, R.R., and Puckette, C.M. see Kolavennu, V.R.
Leurs, L., and Stoll, R.L. Three-dimensional quasi-static magnetic field in superconducting-rotor synchronous generators with a magnetic steel rotor screen C p69
Levenston, A.G., Foote, P.D., Hall, T.J., and Aldridge, N.B. see Foote, P.D.
Leverge, R., Segui, A., and Lebaron, J.P. see Segui, A.
Levy, D., and McQuade, E. Analysis and synthesis of static power convertors G p39
Levy, D.C., Jennings, G.D., and Harley, R.G. see Jennings, G.D.
Li, H.F., Cheung, Y.S., and Chiu, P.P.K. Microcomputer system specification using interval logic and a modified labelled-net model E p223
Li, Wang, and Xiaolin, Qiao Optimisation philosophy of acquisition process for tracking radar F p493
Liao, S.A., Liu, W.C., Wang, Y.H., and Chang, C.Y. see Liu, W.C.
Liaw, C.M., Pan, C.T., and Ouyang, M. Model reduction of discrete systems using the power decomposition method and the system identification method D p30
Liesenberg, H.K.E., and Kinniment, D.J. Placement expanding autolayout router I p55
Lilley, T., Kingswood, N., Dagless, E.L., Belchamber, R.M., Betteridge, D., and Roberts, J.D.M. see Kingswood, N.
Lim, W. Design methodology for stoppable clock systems E p65
Lin, C.-M., and Chen, B.-S. Adaptive controller with desired pole/zero assignment D p301
Lind, L.F., and Adama, A. see Adama, A.
Lind, L.F., and Barros, M. de P. see Barros, M. de P.
Lind, L.F., and Redwood-Sawyerr, J.A.S. see Redwood-Sawyerr, J.A.S.
Lindell, I.V., Alanen, E., and Hujanen, A.T. see Alanen, E.
Lindsay, J.F., Arumugam, R., and Krishnan, R. Finite-element analysis characterisation of a switched reluctance motor with multitooth per stator pole B p347
Lindstrom, P., and Collings, N. see Collings, N.
Linsdall, D.K., and Last, J.D. see Last, J.D.
Lipparini, A., Rizzoli, V., Cecchetti, C., and Neri, A. see Rizzoli, V.
Liu, W.C., Wang, Y.H., Chang, C.Y., and Liao, S.A. GaAs $n^+ip^+in^+$ barrier transistor with ultrathin p^+AlGaAs base prepared by molecular beam epitaxy I p47
Liu, Y.D., Bolton, H.R., and Mallinson, N.M. see Bolton, H.R.
Lockwood, M., Ahmed, M.M., Taufiq, J.A., and Goodman, C.J. see Ahmed, M.M.
Loh, W.K., and Renfrew, A.C. Optimised microelectronic power control of an AC drive for an electric vehicle B p291
Lomes, A., Barboy, B., and Perkalski, E. see Barboy, B.
Long, N.R.W., and Griffiths, H.D. see Griffiths, H.D.
Loques, O.G., and Kramer, J. Flexible fault tolerance for distributed computer systems E p319
Lorti, D.C., and Hsu, Y.S. see Hsu, Y.S.
Lothian, J.S., and O'Neill, H.J. The C-MAC/packet system for satellite broadcasting F p374

Lou, J.-J., and Wei, C.-H. see Wei, C.-H.
Low, T.S., Chua, S.J., and Chen, P.C. see Chua, S.J.
Low, T.S., and Binns, K.J. Multistacked imbricated rotors with permanent magnet excitation: design for new magnetic materials B p205
Lowther, D.A., Rajanathan, C.B., and Freeman, E.M. see Rajanathan, C.B.
Lu, S.C., Evans, B.G., Coakley, F.P., El-Amin, M.H.M., and Wong, C.W. see Evans, B.G.
Lucas, J., and Parish, D.J. see Parish, D.J.
Lucas, T.N. Linear system reduction by the modified factor division method D p293
Luk, Kwai-Man Complex-source-point theory of the two dimensional Hermite-Gaussian beams J p245
Luk, Kwai-Man Generalised open resonator theory J p293

M

M'Pherson, P.K. Systems engineering: a proposed definition A p330
MacDonald, M. Comments on a simplified analytical test for systems with delays D d142
Machias, A.V. Analysis of transient stability of a multimachine power system using a variable gradient Lyapunov function C p81
Maclean, D.J.H. Improved computer-aided design of amplifiers using feedback concepts H p428
Macura, A., and Rutkowski, J. see Rutkowski, J.
Magdy, M.A., and Ng, T.S. see Ng, T.S.
Magdy, M.A., and Ng, T.S. Regulation and control effort in self-tuning controllers D p289
Magee, J., Sloman, M., Kramer, J., and Twidle, K. see Sloman, M.
Mahesh, M.S., Biswas, S.K., and Iyengar, B.S.R. see Biswas, S.K.
Mahmoud, M.S., Chen, Y., and Singh, M.G. A two-stage output feedback design D p279
Mahmoud, M.S., and Howson, D.P. see Howson, D.P.
Majithia, J.C., Yu, W., and Wong, J.W. see Yu, W.
Makh, S.S., Baillie, W.L., Openshaw, P.M., and Hart, A.D. see Baillie, W.L.
Makh, S.S., Hart, A.D., Openshaw, P.M., and Baillie, W.L. Development of liquid crystal light valves using $Bi_{12}SiO_{20}$ as the photoconductor. Part 1: Charge trapping and its effect on device resolution J p60
Malah, D., and Ephraim, Y. see Ephraim, Y.
Malewski, R. Measuring properties of IREQ's 5.4 MV voltage divider A p523
Malik, O.P., Cheng, Shi-jie, and Hope, G.S. see Cheng, Shi-jie
Malik, V., Srinivasan, R., and Sharma, P. see Srinivasan, R.
Mallinson, N.M., Bolton, H.R., and Liu, Y.D. see Bolton, H.R.
Manookian, W.Z., and Wilson, J.I.B. Interfacial problems in preparing a-Si : H FETs I p153
Mariani, L., Martegani, E., and Alberghina, L. Yeast population models for monitoring and control of biotechnical processes D p210
Marincic, A., Benson, F.A., and Tealby, J.M. Measurements of permittivity by the use of surface waves in open and closed structures H p441
Marques, R., and Horno, M. Dyadic Green's function for microstrip-like transmission lines on a large class of anisotropic substrates H p450
Marshall of Goring, Lord The 1985 Lord Nelson of Stafford Lecture Electricity in the UK (Lecture) A p119
Marshall, C.B. Low-power integrable paging receiver architecture F p449
Marshall, J.E., Abbas, A., and Walton, K. see Abbas, A.
Marszalek, W. Two-dimensional discrete model with varying coefficients D p177
Marszalek, W. On using orthogonal functions for the analysis of singular systems D d191
D d315
Martinez, L., Poveda, A., and Miguel, J.M. Modelling and analysis of the Cuk convertor using the discrete impulse response method G p77
Martegani, E., Mariani, L., and Alberghina, L. see Mariani, L.
Martin, E., Chicon, R., and Navarro, A. see Chicon, R.
Martin, E., Sanchez, M.C., Villalba, C.R., and Zamarro, J.M. see Sanchez, M.C.
Maruhashi, T., Savary, P., and Nakaoka, M. see Savary, P.
Mathiopoulos, P., and Feher, K. Performance evaluation of a 512-QAM system in distorted channels F p199 F e300
Mazhur, S.P., Sinha, A.K., and Sinha, A.K. Experimental study of a slotted telemetry antenna array with a shaped beam for satellite communication H p490
Matsumoto, T., Kawamura, T., Ishii, M., and Hisada, T. see Kawamura, T.
McAllister, I.W. On the electrostatics of spherical protrusions A p84
McClay, W., McIlwaine, S.A., and Tindall, C.E. see McIlwaine, S.A.
McCormack, J.S., Nourshargh, N., and Starr, E.M. see Nourshargh, N.
McDowell, D.M., Chandler, J.A., Hinch, L.W., Hughes, D.A., Rowe, P.W., and Wood, A.B. see Chandler, J.A.
McEwan, N.J., and Bashir, S.O. see Bashir, S.O.
McGhee, J., and Henderson, I.A. see Henderson, I.A.
McGowan, J.E., and Allera, S.V. see Allera, S.V.
McIlwaine, S.A., Tindall, C.E., and McClay, W. Frequency tracking for power system control C p95
McKenzie, W., Barry, D.M., Snowden, C.M., and Howes, M.J. Computer-aided design of MMIC structures H p405
McLane, P.J., and Ho, P.K.M. see Ho, P.K.M.
McLernon, D.C. Correlation algorithms, circuits and measurement applications G d255
McLernon, D.C., and King, R.A. Additional properties of one-dimensional limit cycles G p140
McMillan, B.W. Maintenance of hydro-electric plant C p142
McQuade, E., and Levy, D. see Levy, D.
Meal, D.V., Eriksson, A.J., le Roux, B.C., and Geldenhuys, H.J. see Eriksson, A.J.
Mecrow, B.C., and Jack, A.G. see Jack, A.G.
Medeiros Filho, F.C., Cole, R.S., and Sarma, A.D. Millimetre-wave rain induced attenuation: theory and experiment H p308
Meglicki, Z., Heasell, E.L., and Nassibian, A.G. Lateral analysis of conventional and field-induced junction solar cells J p149
Mehler, M., Tun, S., and Adatia, N. Direct far-field GO synthesis of shaped beam reflector antennas J p213
Mellis, J., Adams, G.R., and Ward, K.D. High-dynamic-range interferometric Bragg-cell spectrum analyser J p26
Mellitt, B., Taufiq, J.A., and Goodman, C.J. see Taufiq, J.A.
Menon, S.G., and Rao, B.B.V.R. Planning of distribution systems in developing countries C p384
Messer, H., and Bar-Ness, Y. Closed-loop autocorrelator and its application to frequency discrimination F p25
Metcalfe, J.G., Holden, A.J., Debney, B.T., King, J.P., and Oxley, C.H. see Holden, A.J.
Meyer, H.-D., Bellgardt, K.-H., Kuhlmann, W., Schügerl, K., and Thoma, M. see Bellgardt, K.-H.
Michell, J.A., Solana, J.M., and Bracho, S. see Solana, J.M.
Midoun, A., and Bowes, S.R. see Bowes, S.R.
Miguel, J.M., Martinez, L., and Poveda, A. see Martinez, L.
Mihirig, A.M., and Wvong, M.D. see Wvong, M.D.
Miller, A.R., and Vegh, E. Family of curves for the rough surface reflection coefficient H p483
Milne, G.J. Behavioural description and VLSI verification E p127 I p87
Minamide, N., Nikiforuk, P.N., and Gupta, M.M. Design of a reduced-order adaptive observer D p133
Mirbod, S.A., and Dunford, W.G. A capacitor bank charger using a high frequency resonant circuit B e30
Miron, C., Ogrutan, P., and Wardegger, E. Two new Miller theorems G p271
Mittra, R., Kitazawa, T., and Hayashi, Y. see Kitazawa, T.
Moglestue, C. Hot, tepid and temperate electrons in bulk GaAs I p35
Moharir, P.S., Venkata Rao, K., and Varma, S.K. see Venkata Rao, K.
Mohsen, A., and Franceschetti, G. see Franceschetti, G.
Moir, T.J. Optimal deconvolution smoother D p13
Mondal, T.B., Bharath Kumar, K., and Krishnapur, R. see Bharath Kumar, K.
Montague, G.A., Morris, A.J., Wright, A.R., Aynsley, M., and Ward, A.C. Online estimation and adaptive control of penicillin fermentation D p240
Monteith, W., Irwin, G.W., and Beattie, W.C. see Irwin, G.W.
Montgomery, P.A., and Williams, D. see Williams, D.
Moore, W.R., and Damper, R.I. Applications of built-in-test equipment within large systems G p221
Mori, H., and Taniguchi, K. see Taniguchi, K.
Morris, A.J., Montague, G.A., Wright, A.R., Aynsley, M., and Ward, A.C. see Montague, G.A.
Morris, E.L., Ifeachor, E.C., Jervis, B.W., Allen, E.M., and Hudson, N.R. see Ifeachor, E.C.
Morris, O.J., Lee, M. de J., and Constantinides, A.G. Graph theory for image analysis: an approach based on the shortest spanning tree F p146
Mosch, W., Dietrich, M., Lemke, E., and Hauschild, W. Statistical design of large UHV electrodes in air A p547
Moschytz, G.S., and Mulawka, J.J. Direct analysis of stray-insensitive switched-capacitor networks using signal flow graphs G p145
Mosley, K.E. Factors affecting the design and operation of redox batteries A p375
Motlis, J., Anders, G.J., El-Kady, M.A., Ganton, R.W.D., and Horrocks, D.J. see Anders, G.J.
Moto-Oka, T., Fujita, M., Kono, S., and Tanaka, H. see Fujita, M.
Mouftah, H.T., and Garba, A.I. VLSI implementation of a 5-trit full adder G e38
Moustafa, K.A.F., Gaafar, M.Y., and Abu-El-Yazid, T. Modelling and identification of a stochastic water-quality system using actual data D p159
Moutter, S.P., Bodger, P.S., and Gough, P.T. Spectral decomposition and extrapolation of variations in electricity loading C p247
Müller-Hellmann, A., van Wyk, J.D., and Skudelny, H.-Ch. see van Wyk, J.D.
Mulawka, J.J., and Moschytz, G.S. see Moschytz, G.S.
Mulder, J., Hamilton-Price, P.G., Read, R.F., Goodsell, D.J., Campbell, D.S., and Cohen, I.H. see Hamilton-Price, P.G.
Munack, A., and Thoma, M. Application of modern control for biotechnological processes D p194
Munday, E., and El-Agamy, M.A. see El-Agamy, M.A.
Murgatroyd, P.N. The Brooks inductor: a study of optimal solenoid cross-sections B p309
Murphy, F.J., and Lawton, P. see Lawton, P.
Musha, T., Ogata, M., and Sekine, M. see Ogata, M.
Muzio, J.C., and Eris, E. see Eris, E.
Mytri, V.D., and Shivaprasad, A.P. Hybrid constant factor incremental delta modulators F p522

N

Nahman, J., and Salamon, D. Earthing system modelling by element aggregation C p54
Naidu, S.R., and de Lima, F.N. A frequency-dependent transmission line model for electromagnetic transient studies C e66
Nakanishi, H., and Ametani, A. Transient calculation of a transmission line using superposition law C p263
Nakaoka, M., Savary, P., and Maruhashi, T. see Savary, P.
Nandi, R. Precise insensitive tunable *RC*-oscillator realisation using current conveyors G p129
Napthine, M., Jordan, J.R., and Kiani-Shabestari, B. see Jordan, J.R.
Narraway, J.J., and Venkatesan, R. Bus and instruction fault diagnosis E p333
Narraway, J.J., and Venkatesan, R. Digital filter functions with short coefficients G p30
Nassibian, A.G., Meglicki, Z., and Heasell, E.L. see Meglicki, Z.
Nath, R., and Lamba, S.S. Development of coherency-based time-domain equivalent model using structure constraints C p165
Navarro, A., Chicon, R., and Martin, E. see Chicon, R.
Nellis, C.L., Sarkinen, S.H., and Bradley, D.A. Electrical test results of UHV airgaps and insulator configurations A p493
Neri, A., Rizzoli, V., Cecchetti, C., and Lipparini, A. see Rizzoli, V.
Newman, D.H., and Ritchie, S. Sources and detectors for optical fibre communications applications: the first 20 years J p213
Newman, I.A., Stallard, R.P., and Woodward, M.C. Processor failure recovery for a resource sharing algorithm E p79
Ng, M.H., Tarbuck, L.A., Tampion, J., and Leigh, J.R. see Tarbuck, L.A.
Ng, T.S., and Magdy, M.A. see Magdy, M.A.
Ng, T.S., and Magdy, M.A. Representation and transient behaviour of self-tuning controller for deterministic disturbances D p285
Nguyen, T.T., and Humpage, W.D. see Humpage, W.D.
Nicholson, M.G., Cooper, I.R., and Petts, C.R. see Cooper, I.R.
Nicholson, T., and Bromley, A.G. see Bromley, A.G.
Nikiforuk, P.N., Minamide, N., and Gupta, M.M. see Minamide, N.
Nishizawa, J., and Suto, K. see Suto, K.
Norris, T.E., and Dwek, M.D. Economics and integration of hydro-electric plant in developing countries C p121
Nourshargh, N., Starr, E.M., and McCormack, J.S. Plasma deposition of GeO_2/SiO_2 and Si_3N_4 waveguides for integrated optics J p264
Nourshargh, N., and Starr, E.M. Interference effects between modes of planar optical waveguides J p303
Nutt, A.C.G., Wong, K.K., Clark, D.F., Winfield, J., Laybourn, P.J.R., and De La Rue, R.M. see Wong, K.K.
Nwokah, O.D.I. On nonsingular value based design of controllers for robust stability D p57

O

O'Connor, P.D.T., and Harris, L.N. Reliability prediction: a state-of-the-art review (Commissioned IEE review) A p202
O'Keane, F.D., and Fagan, A.D. see Fagan, A.D.
O'Neill, H.J., and Lothian, J.S. see Lothian, J.S.
O'Neill, W.P., and Varlow, B.R. Electrostatic discharges from the human body A p606
Obradović, I. Switched reluctance motor for rail traction B p46

Ogata, M., Sekine, M., and Musha, T. Discrimination of radar clutter by texture analysis F p257
Ogrutan, P., Miron, C., and Wardegger, E. see Miron, C.
Okazaki, S., Supadech, S., Akiba, Y., Kurosu, T., and Iida, M. see Supadech, S.
Oldfield, J.V. Logic programs and an experimental architecture for their execution E p163 I p123
Olver, A.D., and Lamb, J.W. see Lamb, J.W.
Ongaro, R. Exact solutions for Debye-like relaxations in multilayered conducting dielectrics A p275
Openshaw, P.M., Baillie, W.L., Hart, A.D., and Makh, S.S. see Baillie, W.L.
Openshaw, P.M., Makh, S.S., Hart, A.D., and Baillie, W.L. see Makh, S.S.
Orawski, G., Bradbury, J., and Vanner, M.J. Overhead distribution lines — some reflections on design C p409
Ormondroyd, R.F., Perkins, M.C., and Rozzi, T.E. see Perkins, M.C.
Orton, D.W.R., and Darby, B.J see Darby, B.J
Ouyang, M., Liaw, C.M., and Pan, C.T. see Liaw, C.M.
Owens, D.H., and Chotai, A. Approximate models in multivariable process control: An inverse Nyquist array and robust tuning regulator interpretation D p1
Oxley, C.H., Holden, A.J., Debney, B.T., King, J.P., and Metcalfe, J.G. see Holden, A.J.
Oxley, C.H., and Holden, A.J. Simple models for high-frequency MESFETs and comparison with experimental results H p335

P

Pan, C.T., Liaw, C.M., and Ouyang, M. see Liaw, C.M.
Papadakis, J.A. Designing active filters with linear transformations using off-the-shelf building blocks G p216
Paraskevopoulos, P.N. Analysis of singular systems using orthogonal functions D d191 D d315
Parihar, S., and Webb, J.P. see Webb, J.P.
Parish, D.J., and Lucas, J. Advanced automotive multiplexed wiring system E p312
Park, W.S., and Seshadri, S.R. Reradiation from a grating coupler for a grounded dielectric slab waveguide H p10
Parker, F.J., and Foster, E.N. see Foster, E.N.
Parmenter, C.S. Comparing distribution practices C p389
Parrott, J.E. Self-consistent detailed balance treatment of the solar cell J p314
Parsons, J.D., Adachi, F., Feeney, M.T., and Williamson, A.G. see Adachi, F.
Partridge, S.L. Silicon-on-insulator technology E p106 I p66
Pasupathy, S., Kohno, R., Imai, H., and Hatori, M. see Kohno, R.
Paterson, N., Whittington, H.W., Jordan, J.R., and Johnson, P.M. see Whittington, H.W.
Pell, C., Hanle, E., and Farina, A. see Hanle, E.
Pell, C., and Hanle, E. Bistatic and multistatic radar (Editorial) F p585
Pengelly, R. Editorial. Computer-aided design of microwave circuits H p329
Penman, J., Dey, M.N., Tait, A.J., and Bryan, W.E. Condition monitoring of electrical drives B p142
Penman, J., Grieve, M.D., and Wilson, A.F. On the solution of open boundary field problems using the finite-element method A p596
Penman, J., and Grieve, M.D. Efficient calculation of force in electromagnetic devices B p212
Peraino, J., Chandler, J.A., Hinch, L.W., Fair, R.I., Hughes, D.A., and Rowe, P.W. see Chandler, J.A.
Perera, W.A., and Rayner, P.J.W. Optimal design of discrete coefficient DFTs for spectral analysis: extension to multiplierless FFTs G p8
Perera, W.A., and Rayner, P.J.W. Optimal design of discrete coefficient DFTs for spectral analysis G p1
Perkalski, E., Barboy, B., and Lomes, A. see Barboy, B.
Perkins, M.C., Ormondroyd, R.F., and Rozzi, T.E. Analysis of absorptive bistable characteristics of multisegment lasers J p283
Petts, C.R., Cooper, I.R., and Nicholson, M.G. see Cooper, I.R.
Pickup, I.E.D., and Russell, A.P. see Russell, A.P.
Piontek, C., Arndt, F., Bornemann, J., Heckmann, D., Semmerow, H., and Schueler, H. see Arndt, F.
Pires, J.J.O., and da Rocha, J.R.F. Digital pulse position modulation over optical fibres with avalanche photodiode receivers J p309
Platonov, N.I., Veselov, G.I., and Kirpa, A.I. see Veselov, G.I.
Plessner, K.W., Fox, M., and Stannard-Powell, S.J. see Fox, M.
Plessner, K.W., Stannard-Powell, S.J., White, C.J., and Iddin, A.D. Hydrogen effects in installed cables and under accelerated conditions J p124
Plotkin, E., Roytman, L.M., and Swamy, M.N.S. see Roytman, L.M.
Popovic, Lj.M. Proximity effect between an earthing grid and external earthing electrodes in an earthing system of high-voltage installations C p346
Poveda, A., Martinez, L., and Miguel, J.M. see Martinez, L.
Prada, P.B. Swing busbar reactive power generation constraints in power flow calculations C p186
Prasad, S., and Quynh, L.C. see Quynh, L.C.
Prasad, S., and Quynh, L.C. Equivalent linear span analysis of binary sequences having an interleaved structure F p288
Prystajecky, A.H., Goud, P.A., and Englefield, C.G. High-speed encoder for the 16B9Q line code G p115
Puckette, C.M., Kolavennu, V.R., Rappaport, S.S., Duersch, R.R., and Lester, H.L. see Kolavennu, V.R.
Putley, E.H. Editorial: Historical radar F p210
Putman, C.A., Rappaport, S.S., and Schilling, D.L. Comparison of strategies for serial acquisition of frequency-hopped spread-spectrum signals F p129

Q

Quinn, J.J. Monitoring the technological environment A p361
Quynh, L.C., and Prasad, S. see Prasad, S.
Quynh, L.C., and Prasad, S. New class of sequence sets with good auto- and crosscorrelation functions F p281

R

Rajanathan, C.B., Lowther, D.A., and Freeman, E.M. Stability characteristics of the Xi-core A p89
Ramirez-Rosado, I.J., and Gönen, T. see Gönen, T.
Rao, B.B.V.R., and Menon, S.G. see Menon, S.G.
Rao, S.M., Arvas, E., and Sarkar, T.K. see Arvas, E.
Rappaport, S.S., Kolavennu, V.R., Duersch, R.R., Lester, H.L., and Puckette, C.M. see Kolavennu, V.R.
Rappaport, S.S., Putman, C.A., and Schilling, D.L. see Putman, C.A.
Rawson, K.J. The architecture of maritime systems A p333
Ray, P.K. Characterisation of plasma in a rail gun A p38
Rayner, P.J.W., and Perera, W.A. see Perera, W.A.
Read, R.F., Hamilton-Price, P.G., Goodsell, D.J., Mulder, J., Campbell, D.S., and Cohen, I.H. see Hamilton-Price, P.G.
Redwood-Sawyerr, J.A.S., and Lind, L.F. Some useful criteria for the optimisation of phase code spectra F p16
Reed, I.S., and Jensen, J.M. see Jensen, J.M.
Reggiannini, R., Bedini, L., and Fossi, S. see Bedini, L.
Renardières Group, Les Double-impulse tests of long airgaps Part 2. Leader decay and reactivation A p410
Renardières Group, Les Double-impulse tests of long airgaps Part 3. Voltage front perturbation effects A p438
Renardières Group, Les Double-impulse tests of long airgaps Part 4. Effects of pre-existing space charge on positive discharge development A p469
Renardières Group, Les Double impulse tests of long airgaps Part 1. Engineering problems and physical processes: the basis of recent tests A p395
Rendle, M., Tomlinson, M., and Ward, C. see Tomlinson, M.
Renfrew, A.C., and Loh, W.K. see Loh, W.K.
Renshaw, D. Workshop on integrated CAD and workstations, 1985 Systems on silicon seminar E p181 I p141
Requier, J.P., Barlaud, M., de Fornel, B., and Gauvrit, M. see Barlaud, M.
Resende, J.W., and Yacamini, R. see Yacamini, R.
Richards, G.G., and Tan, O.T. see Tan, O.T.
Richardson, J., and Ford, A.E.W. Editorial: Aspects of power distribution C p369
Rickson, C. Electrical machine core imperfection detection B p190
Riley, C., Sheya, M.S., and Grimsdale, R.L. see Sheya, M.S.
Ritchie, S., and Newman, D.H. see Newman, D.H.
Rizzoli, V., Cecchetti, C., Lipparini, A., and Neri, A. User-oriented software package for the analysis and optimisation of nonlinear microwave circuits H p385
Roberts, J.B., and Ajmani, D.B.S. Spectral analysis of randomly sampled signals using a correlation-based slotting technique F p153
Roberts, J.B.G. Role for optical signal and image processing in the VLSI era J p2
Roberts, J.D.M., Kingswood, N., Dagless, E.L., Belchamber, R.M., Betteridge, D., and Lilley, T. see Kingswood, N.
Robinson, J.A. Low-data-rate visual communication using cartoons: a comparison of data compression techniques F p236
Roddy, D.J., and Irwin, G.W. Fixed-wing-angle BTT control D p111
Roome, S.J. Bibliography on propagation factors affecting microwave links operating in the 10 GHz to 30 GHz frequency range H p50
Rosen, W., Scheiding, W., Thoma, M., Hecht, V., and Schügerl, K. see Scheiding, W.
Rowe, P.W., Chandler, J.A., Hinch, L.W., Fair, R.I., Hughes, D.A., and Peraino, J. see Chandler, J.A.
Rowe, P.W., Chandler, J.A., Hinch, L.W., Hughes, D.A., McDowell, D.M., and Wood, A.B. see Chandler, J.A.
Roytman, L.M., Plotkin, E., and Swamy, M.N.S. On minimisation of word length of multidimensional filter realisations G p35
Roytman, L.M., and Eichmann, G. see Eichmann, G.
Rozzi, T.E., Perkins, M.C., and Ormondroyd, R.F. see Perkins, M.C.
Rudd, D. A renting system for radio spectrum? A p58
Rungsunseri, Y., Thajchayapong, P., and Kimpan, C. see Thajchayapong, P.
Russell, A.P., and Pickup, I.E.D. Calculation of pull-out torque characteristics of hybrid stepping motors with current-regulating drive circuits B p341
Russo, A., Farina, A., and Studer, F.A. see Farina, A.
Rutkowski, J., and Macura, A. Multiple fault location in AC circuits G p279
Ryan, H.M., and Whiskard, J. Design and operation perspective of a British UHV laboratory A p501

S

Şeker, Ş.S. Microwave backscattering from a layer of randomly oriented discs with application to scattering from vegetation H p497
Şeker, Ş.S. Radar cross-section of thin dielectric bodies H p305
Sadler, R.J., and Buttinger, M.R. Acousto-optic ambiguity function processor J p35
Safigianni, A., and Tsanakas, D. Short-circuit electromagnetic forces in three-phase gas insulated systems with aluminium enclosure B p331 B e364
Saha, H., and Bhattacharya, G. see Bhattacharya, G.
Said, A.E., and Zaghloul, M.E. Stray-free switched-capacitor general biquad blocks G p154
Saied, B.M., and Evans, P.D. see Evans, P.D.
Salamon, D., and Nahman, J. see Nahman, J.
Salous, S. FMCW channel sounder with digital processing for measuring the coherence of wideband HF radio links F p456
Sanchez, M.C., Villalba, C.R., Zamarro, J.M., and Martin, E. Automatic technique for the characterisation of a dielectric resonator coupled to a microstrip line H p99
Sarkar, T.K., Arvas, E., and Rao, S.M. see Arvas, E.
Sarkinen, S.H., Nellis, C.L., and Bradley, D.A. see Nellis, C.L.
Sarma, A.D., Medeiros Filho, F.C., and Cole, R.S. see Medeiros Filho, F.C.
Sato, S., and Zaengl, W.S. Effective 3-dimensional electric field calculation by surface charge simulation method A p77
Saunderson, J.C., and Allibone, T.E. see Allibone, T.E.
Savary, P., Nakaoka, M., and Maruhashi, T. Novel type of high-frequency link inverter for photovoltaic residential applications B p279
Savic, M.S. Suppression of the high-frequency disturbances in low-voltage circuits caused by disconnector operation in high-voltage open-air substations C p293
Sayer, W.C. Application of wooden poles for distribution lines C p425
Sayers, A.D. Radiometric sky temperature measurements at 35 and 89 GHz J p233
Sayers, I.L., Kinniment, D.J., and Chester, E.G. Design of a reliable and self-testing VLSI datapath using residue coding techniques E p169 I p129
Scheiding, W., Thoma, M., Hecht, V., Rosen, W., and Schügerl, K. Mathematical description of the behaviour of *Chaetomium cellulolyticum*: modelling of the growth on glucose and cellulose substrate D p199
Schemel, R.E., and Ince, A.N. see Ince, A.N.
Schilling, D.L., Putman, C.A., and Rappaport, S.S. see Putman, C.A.
Schügerl, K., Bellgardt, K.-H., Kuhlmann, W., Meyer, H.-D., and Thoma, M. see Bellgardt, K.-H.
Schügerl, K., Scheiding, W., Thoma, M., Hecht, V., and Rosen, W. see Scheiding, W.
Schünemann, K., Jacob, A., Burkert, E., and Brauns, H. see Jacob, A.
Schueler, H., Arndt, F., Bornemann, J., Heckmann, D., Piontek, C., and Semmerow, H. see Arndt, F.
Scott-Kerr, R.J. Address as Chairman of the IEE Computing & Control Division: The computing industry and the relevance of the IEE E p1
Seeds, A.J., Singleton, J.F., and Brunt, S.P. see Singleton, J.F.
Seeds, A.J., and Lenoir, B. Avalanche diode harmonic optoelectronic mixer J p353
Segui, A., Lebaron, J.P., and Leverge, R. Biomedical

engineering approach of pharmacokinetic problems: computer-aided design in pharmacokinetics and bioprocessing D p217
Sekine, M., Ogata, M., and Musha, T. see Ogata, M.
Semmerow, H., Arndt, F., Bornemann, J., Heckmann, D., Piontek, C., and Schueler, H. see Arndt, F.
Semmerow, H., Arndt, F., Heckmann, D., Bornemann, J., and Vahldieck, R. see Arndt, F.
Serra, A., Ciminiera, L., and Valenzano, A. see Ciminiera, L.
Seshadri, S.R., and Park, W.S. see Park, W.S.
Seymour, C.D. Development of spacecraft solid-state high-power L-band amplifiers F p326
Shafai, L., and Kishk, A.A. see Kishk, A.A.
Shahzadi, B. Synthesis of non-series-parallel *LC* one-port networks G p181 G e250
Sharaf, S.M.Z., Hogg, B.W., Abdalla, O.H., and El-Sayed, M.L. Multivariable adaptive controller for a turbogenerator D p83
Sharma, P., Srinivasan, R., and Malik, V. see Srinivasan, R.
Sharp, J., and Helszajn, J. see Helszajn, J.
She, X.Y., and Chow, Y.L. Interdigital microstrip capacitor as a four-port network H p191
Sheehan, P.G., and Forrest, J.R. Satellite-borne active phased array techniques for mobile communications F p339
Sheeran, M. Design and verification of regular synchronous circuits E p295
Shelley, M.W., and Bond, K. see Bond, K.
Shen, W.-Z., Jou, S.-J., Jen, C.-W., and Lee, C.-L. see Jou, S.-J.
Shen, Y.C., and Xiao, X.M. see Xiao, X.M.
Sherif, M., and Davies, P.A. see Davies, P.A.
Sheya, M.S., Riley, C., and Grimsdale, R.L. Microprocessor-controlled multichannel STAT analyser A p94
Shieh, L.S., Dib, H.M., and Yates, R.E. Separation of matrix eigenvalues and structural decomposition of large-scale systems D p90
Shih, D.-H., and Kung, F.-C. Shifted Legendre approach to the analysis and identification of a linear delayed system with a nonlinear gain D p127
Shivaprasad, A.P., and Mytri, V.D. see Mytri, V.D.
Showghi, C. Faults in parallel cables C p270
Shunkang, Liu, and Carter, R.G. see Carter, R.G.
Sillitto, R.M., Underwood, I., and Vass, D.G. see Underwood, I.
Sinclair, M.W., Wallace, A.M., and Thornley, B. A new UK national standard of electrical noise at 77 K in WG15 A p587
Sinclair, M.W., and Wallace, A.M. A new national electrical noise standard in X-band A p272
Singh, J., and De La Rue, R.M. Observations of intermodulation effects in an integrated optical spectrum analyser J p105
Singh, M.G., Mahmoud, M.S., and Chen, Y. see Mahmoud, M.S.
Singh, M.G., and Ambrosiadou, V. see Ambrosiadou, V.
Singh, P.N.P., and Gray, C.B. see Gray, C.B.
Singleton, J.F., Seeds, A.J., and Brunt, S.P. Optical control of W-band impatt oscillators J p349
Sinha, A.K., Mathur, S.P., and Sinha, A.K. see Mathur, S.P.
Sitch, J.E., Cudd, P.A., and Benson, F.A. see Cudd, P.A.
Skudelny, H.-Ch., van Wyk, J.D., and Müller-Hellmann, A. see van Wyk, J.D.
Sloman, M., Kramer, J., Magee, J., and Twidle, K. Flexible communication structure for distributed embedded systems E p201
Smallwood, R.H., and Dixon, P. An electronic Doppler signal generator for assessing continuous-wave ultrasonic Doppler flowmeters A p104
Smith, G., and Cornbleet, S. see Cornbleet, S.
Smith, J.R. Editorial: Plant condition monitoring B p141
Smith, Sir A. Engineering and industry — the hidden hunger (Lecture) A p630
Snowden, C.M. Computer-aided design of MMICs based on physical device models H p419
Snowden, C.M., McKenzie, W., Barry, D.M., and Howes, M.J. see McKenzie, W.
Sohtell, E.V. Mutual admittance between slots on a cylinder using the extended Poynting vector method H p238
Solana, J.M., Michell, J.A., and Bracho, S. Elimination algorithm: a method for fault diagnosis in combinational circuits based on an effect-cause analysis E p31
Sommariva, A.M., and Calandra, E.F. see Calandra, E.F.
Spooner, E. DC traction motor with slotless armature B d367
Srinivasan, R. Distributed radar detection theory F p55
Srinivasan, R., Sharma, P., and Malik, V. Distributed detection of Swerling targets F p624
Srivastava, V., and Carter, R.G. Effect of boundaries on the space charge potential in coupled cavity travelling wave tubes I p185
Stallard, R.P., Newman, I.A., and Woodward, M.C. see Newman, I.A.
Stannard-Powell, S.J., Fox, M., and Plessner, K.W. see Fox, M.
Stannard-Powell, S.J., Plessner, K.W., White, C.J., and Iddin, A.D. see Plessner, K.W.
Stantchev, K.P., and Georgiev, V.I. see Georgiev, V.I.
Starr, E.M., Nourshargh, N., and McCormack, J.S. see Nourshargh, N.
Starr, E.M., and Nourshargh, N. see Nourshargh, N.
Stasiński, R. Easy generation of small-*N* discrete Fourier transform algorithms G p133
Stegmüller, B., and Amann, M.-C. see Amann, M.-C.
Stewart, C., Brazil, T., El-Rabaie, S., Choo, E., and Fusco, V. see Brazil, T.
Stoll, R.L., and Leurs, L. see Leurs, L.
Stone, G.C. Discharge detection techniques for stator windings B d112
Stott, J.H. Satellite broadcasting of sound radio F p399
Studer, F.A., Farina, A., and Russo, A. see Farina, A.
Studinger, H., and Weck, K.-H. Switching-impulse strength of the external insulation of three-phase power transformers A p534
Subba Rao, V. Perturbation technique for fields and forces due to current filaments moving above a conducting plate of finite thickness A p129
Subbiah, M., Ammasaigounden, N., and Krishnamurthy, M.R. see Ammasaigounden, N.
Sugishita, T., Ando, T., and Yamasaki, H. see Ando, T.
Sun, H.-F., and Goldberg, M. see Goldberg, M.
Supadech, S., Okazaki, S., Akiba, Y., Kurosu, T., and Iida, M. Voltage-controlled negative resistance in p^+-*i*-n^+ planar diodes with injection gate I p1
Suto, K., and Nishizawa, J. Characteristics of the epitaxial semiconductor Raman laser J p259
Swamy, M.N.S., Roytman, L.M., and Plotkin, E. see Roytman, L.M.
Świerniak, A. Control laws for systems with inequality models of uncertainty D p153
Szeliski, R., and Ito, M.R. New Hermite cubic interpolator for two-dimensional curve generation E p341

T

Tade, M.O., Bayoumi, M.M., and Bacon, D.W. Adaptive decoupling of a class of multivariable dynamic systems using output feedback D p265
Tait, A.J., Penman, J., Grey, M.N., and Bryan, W.E. see Penman, J.
Takawira, F., and Ingram, D.G.W. Significance of phase distortion in digital transmission systems F p115
Tampion, J., Tarbuck, L.A., Ng, M.H., and Leigh, J.R. see Tarbuck, L.A.
Tan, O.T., and Richards, G.G. Decoupled boundary layer model of induction machines B p255
Tanaka, H., Fujita, M., Kono, S., and Moto-Oka, T. see Fujita, M.
Taniguchi, K., and Mori, H. Applications of a power chopper to the thyristor Scherbius B p225
Tarbuck, L.A., Ng, M.H., Tampion, J., and Leigh, J.R. Development of strategies for online estimation of biomass and secondary product formation in growth-limited batch fermentations D p235
Taufiq, J.A., Ahmed, M.M., Goodman, C.J., and Lockwood, M. see Ahmed, M.M.
Taufiq, J.A., Goodman, C.J., and Mellitt, B. Railway signalling compatability of inverter fed induction motor drives for rapid transit B p71
Taufiq, J.A., Mellitt, B., and Goodman, C.J. Novel algorithm for generating near optimal PWM waveforms for AC traction drives B p85
Tavner, P.J., Gaydon, B.G., and Ward, D.M. Monitoring generators and large motors B p169
Taylor, G.N., Clarke, S.L.H., Hooper, D.E., and Clement-Jones, J. see Clarke, S.L.H.
Taylor, I.F. Identification of finite-order models of distributed systems D p276
Tealby, J.M., Marincic, A., and Benson, F.A. see Marincic, A.
Tellier, R., and Gallet, G. French distribution systems: basic features and practices C p377
Texier, C., and Kouadri, B. Model of the formation of a dry band on an NaCl-polluted insulation A p285
Thajchayapong, P., Kimpan, C., and Rungsunseri, Y. Multiple critical pole maximally flat *RC* active filter with sharp cutoff G p285
Thoma, M., Bellgardt, K.-H., Kuhlmann, W., Meyer, H.-D., and Schügerl, K. see Bellgardt, K.-H.
Thoma, M., Scheiding, W., Hecht, V., Rosen, W., and Schügerl, K. see Scheiding, W.
Thoma, M., and Leigh, J.R. see Leigh, J.R.
Thoma, M., and Munack, A. see Munack, A.
Thomas, P., and Haykin, S. Stochastic modelling of radar returns F p476
Thomson, W.T., Cameron, J.R., and Dow, A.B. see Cameron, J.R.
Thornley, B., Sinclair, M.W., and Wallace, A.M. see Sinclair, M.W.
Thurber, R.E., and Castella, F.R. see Castella, F.R.
Tindall, C.E., McIlwaine, S.A., and McClay, W. see McIlwaine, S.A.
Titchener, M.R. Novel data packing algorithm for improved string matching E p185
Titchener, M.R., and Hunter, J.J. Synchronisation process for the variable-length T-codes E p54
Tomlinson, M., Ward, C., and Rendle, M. Digital pseudo-analogue satellite TV transmission system F p384
Totterdell, D.H.J., Leake, J.W., and Jain, S.C. High-injection open-circuit voltage decay in *pn*-junction diodes with lightly doped bases I p181
Toutain, S., and Charlot, J.-J. see Charlot, J.-J.
Tozer, T.C., and Withers, D.J. Satellite communications (Editorial) F p317
Trzaska, Z. Computation of the block-pulse solution of singular systems D d191
Tsanakas, D., and Safigianni, A. see Safigianni, A.
Tsitsovits, A.J., and Freris, L.L. A statistical method for optimising wind power contribution in a diesel supplied network C e66
Tsoi, A.C., and Kobe, M.U. see Kobe, M.U.
Tsunoda, Y., and Goto, N. Nonuniformly spaced slot array antenna with low sidelobe pattern H p155
Tun, S., Mehler, M., and Adatia, N. see Mehler, M.
Turner, L.F., and Al-Mukhtar, A.A.A. see Al-Mukhtar, A.A.A.
Turner, L.F., and Habbab, I.M.I. see Habbab, I.M.I.
Twidle, K., Sloman, M., Kramer, J., and Magee, J. see Sloman, M.
Tzeng, F.C., Chang, C.Y., Fang, B.C., and Wang, Y.D. see Chang, C.Y.

U

Underwood, I., Vass, D.G., and Sillitto, R.M. Evaluation of an nMOS VLSI array for an adaptive liquid-crystal spatial light modulator J p77
Urquhart, W.P., and Laybourn, P.J.R. Stimulated Raman scattering in optical fibres: the design of distortion-free transmission J p327

V

Vaahedi, E., and Barnes, R. Comparison of generating and transmission systems for an offshore array of vertical-axis wind turbines C p237
Vahldieck, R., Arndt, F., Heckmann, D., Semmerow, H., and Bornemann, J. see Arndt, F.
Vahldieck, R., and Hoefer, W.J.R. Effect of the metallisation thickness and mounting grooves on the propagation characteristics and bandwidth of finlines H p315
Valenzano, A., Ciminiera, L., and Serra, A. see Ciminiera, L.
Van de Capelle, J.P., Vankwikelberge, P., and Baets, R. Lateral current spreading in DH-lasers above threshold J p143
Vankwikelberge, P., Van de Capelle, J.P., and Baets, R. see Van de Capelle, J.P.
van Niekerk, H.R. Drive system design philosophy for mass minimisation of battery-powered vehicles B p49 B e154
Vanner, M.J., Orawski, G., and Bradbury, J. see Orawski, G.
van Sinderen, M., Huijs, C., and Blaauw, G.A. APL: an effective design language E p100
van Wyk, J.D., Bendien, J.Ch., and Fregien, G. see Bendien, J.Ch.
van Wyk, J.D., Skudelny, H.-Ch., and Müller-Hellmann, A. Power electronics, control of the electromechanical energy conversion process and some applications (Commissioned IEE review) B p369
Varlow, B.R., and O'Neill, W.P. see O'Neill, W.P.
Varma, S.K., Venkata Rao, K., and Moharir, P.S. see Venkata Rao, K.
Varshney, P.K., and Varshney, R.K. see Varshney, R.K.
Varshney, R.K., and Varshney, P.K. Recursive estimation with uncertain observations in a multisensor environment F p527
Vas, P., Brown, J.E., Drury, W., and Jones, B.L. see Brown, J.E.
Vass, D.G., Underwood, I., and Sillitto, R.M. see Underwood, I.
Vegh, E., and Miller, A.R. see Miller, A.R.
Venkata Rao, K., Moharir, P.S., and Varma, S.K. Doubly co-operative ternary sequences F p61
Venkatesan, R., and Narraway, J.J. see Narraway, J.J.
Veselov, G.I., Kirpa, A.I., and Platonov, N.I. Transient-field representation in terms of steady-improper solutions H p21
Vicars-Miles, A.E., Goodlad, A., Eden, R., Leach, G., and Henney, A. see Goodlad, A.
Vilar, E., and Akers, N.P. see Akers, N.P.
Villalba, C.R., Sanchez, M.C., Zamarro, J.M., and Martin, E. see Sanchez, M.C.
Viskum, H., and Bach, H. see Bach, H.

W

Wade, J.A. Electrical auxiliary supply systems for hydro-electric power plants C p148

Walkden, F.W. Optimising the design of low-voltage cable networks C p49
Wallace, A.M., Sinclair, M.W., and Thornley, B. see Sinclair, M.W.
Wallace, A.M., and Sinclair, M.W. see Sinclair, M.W.
Walton, K., Abbas, A., and Marshall, J.E. see Abbas, A.
Wang, N., Wilson, A., and Jackson, R.J. see Wilson, A.
Wang, Y.D., Chang, C.Y., Fang, B.C., and Tzeng, F.C. see Chang, C.Y.
Wang, Y.H., Liu, W.C., Chang, C.Y., and Liao, S.A. see Liu, W.C.
Ward, A.C., Montague, G.A., Morris, A.J., Wright, A.R., and Aynsley, M. see Montague, G.A.
Ward, C., Tomlinson, M., and Rendle, M. see Tomlinson, M.
Ward, D.A., Hilliar, R.A., Jackson, R.J., and Bennett, R.B. see Hilliar, R.A.
Ward, D.M., Tavner, P.J., and Gaydon, B.G. see Tavner, P.J.
Ward, K.D., Mellis, J., and Adams, G.R. see Mellis, J.
Ward, R.T., Kajfez, D., and Wheless, W.P. see Kajfez, D.
Wardegger, E., Miron, C., and Ogrutan, P. see Miron, C.
Warwick, K., Farsi, M., and Guilandoust, M. see Farsi, M.
Watson, P.A., and Leitao, M.J. see Leitao, M.J.
Watt, N. Multibeam SS-TDMA design considerations related to the Olympus Specialised Services Payload F p319
Webb, J.P., and Parihar, S. Finite element analysis of H-plane rectangular waveguide problems H p91
Weck, K.-H., and Studinger, H. see Studinger, H.
Wee, C.L., and Billinton, R. The inclusion of load correlation in the frequency and duration approach for generating capacity reliability evaluation C p6
Wei, C.-H., and Lou, J.-J. Multimemory block structure for implementing a digital adaptive filter using distributed arithmetic G p19
Westbrook, L.D. Measurements of dg/dN and dn/dN and their dependence on photon energy in $\lambda = 1.5$ μm InGaAsP laser diodes J p135
Westbrook, L.D. Optical rise time and frequency chirping predictions for (forward-biased) optical absorption modulators J p273
Westbrook, L.D., and Bickers, L. see Bickers, L.
Westbrook, M.H. Automotive electronics (Commissioned IEE review) A p241
Westcott, B.S., Graham, R.K., and Wolton, I.C. Synthesis of dual-offset shaped reflectors for arbitrary aperture shapes using continuous domain deformation H p57
Westcott, B.S., and Brickell, F. General dielectric-lens shaping using complex co-ordinates H p122
Wheeldon, A.J. Identifying a product strategy (Lecture) A p623
Wheless, W.P., Kajfez, D., and Ward, R.T. see Kajfez, D.
Whiskard, J., and Ryan, H.M. see Ryan, H.M.
White, B.A. Range-space dynamics of scalar-variable-structure control systems D p35
White, C.J., Plessner, K.W., Stannard-Powell, S.J., and Iddan, A.D. see Plessner, K.W.
White, I.H., Carroll, J.E., and Gallagher, D.F.G. see Carr[illegible], J.E.
White, T.[illegible] Method of protecting distribution transformers connected solidly to an urban 11 kV network C p441
Whiteaway, J.E.A., and Garrett, B. see Garrett, B.
Whitmarsh-Everiss, M.J. Design of control systems from a systems engineering point of view A p341
Whittingon, H.W., and Wilson, J.G. Low-frequency electrical characteristics of fresh concrete A p265
Whittington, H.W., Jordan, J.R., Paterson, N., and Johnson, P.M. Performance monitoring of diesel electricity generation B p149
Wilby, W.A., and Gatenby, P.V. Theoretical study of the interferometric Bragg-cell spectrum analyser J p47
Wildey, C.G., and Cummings, D. see Cummings, D.
Wilkinson, R.H. Early history of the high-fidelity finite-impulse-response filter G p243
Williams, D., and Montgomery, P.A. Multivariable adaptive control of baker's yeast fermentation D p247
Williams, T.W.C. Numerically reliable software for control: the SLICE library D p73
Williamson, A.G. Variable-length cylindrical post in a rectangular waveguide H p1
Williamson, A.G., Adachi, F., Feeney, M.T., and Parsons, J.D. see Adachi, F.
Williamson, S., and Begg, M.C. Calculation of the resistance of induction motor end rings B p54
Williamson, S., and Leonard, P.J. Analysis of air-cored tubular induction motors B p285
Wilson, A., Jackson, R.J., and Wang, N. Discharge detection techniques for stater windings B d112
Wilson, A.F., Penman, J., and Grieve, M.D. see Penman, J.
Wilson, J.G., and Whittingon, H.W. see Whittingon, H.W.
Wilson, J.I.B., and Manookian, W.Z. see Manookian, W.Z.
Wilson, W.J., Chen, Y.C., and Aplevich, J.D. see Chen, Y.C.
Winfield, J., Wong, K.K., Nutt, A.C.G., Clark, D.F., Laybourn, P.J.R., and De La Rue, R.M. see Wong, K.K.
Withers, D.J., and Durkin, J. see Durkin, J.
Withers, D.J., and Tozer, T.C. see Tozer, T.C.
Wolton, I.C., Westcott, B.S., and Graham, R.K. see Westcott, B.S.
Wong, C.W., Evans, B.G., Coakley, F.P., El-Amin, M.H.M., and Lu, S.C. see Evans, B.G.
Wong, J.W., Yu, W., and Majithia, J.C. see Yu, W.
Wong, K.K., Nutt, A.C.G., Clark, D.F., Winfield, J., Laybourn, P.J.R., and De La Rue, R.M. Characterisation of proton-exchange slab optical waveguides in X-cut $LiNbO_3$ J p113
Wood, A.B., Chandler, J.A., Hinch, L.W., Hughes, D.A., McDowell, D.M., and Rowe, P.W. see Chandler, J.A.
Wood, J.W., and Hindmarch, R.T. Rotor winding short detection B p181
Woodward, M.C., Newman, I.A., and Stallard, R.P. see Newman, I.A.
Wright, A.R., Montague, G.A., Morris, A.J., Aynsley, M., and Ward, A.C. see Montague, G.A.
Wright, T.M.B. Vulnerability of digital satellite business data links to optimised jamming F p499
Wu, C.-C., and Wu, Y.-Y. Computer generation of topological equations and pseudocircuits for the self testing analogue fault diagnosis algorithm G p273
Wu, K.-T., and Feher, K. Performance of 64-QAM, 225-QPRS and 256-QAM in a cochannel interference environment F p576
Wu, Y.-Y., and Wu, C.-C. see Wu, C.-C.
Wwong, M.D., and Mihirig, A.M. Catastrophe theory applied to transient stability assessment of power systems C p314

X

Xiao, X.M., and Shen, Y.C. Constrained optimisation in the PECOD program G p159
Xinolin, Qiao, and Li, Wang see Li, Wang
Xu, J.D., and Cullen, A.L. see Cullen, A.L.

Y

Yacamini, R. How HVDC schemes can excite torsional oscillations in turbo-alternator shafts C p301
Yacamini, R., and Abu-Nasser, A. The calculation of inrush current in three-phase transformers B p31
Yacamini, R., and Abu-Nasser, A. Transformer inrush currents and their associated overvoltages in HVDC schemes C p353
Yacamini, R., and Resende, J.W. Thyristor controlled reactors as harmonic sources in HVDC convertor stations and AC systems B p263
Yacamini, R., and de Oliveira, J.C. Comprehensive calculation of convertor harmonics with system impedances and control representation B p95
Yamasaki, H., Ando, T., and Sugishita, T. see Ando, T.
Yassine, H.M. Exact discrete time synthesis G p209
Yassine, H.M. General analogue-to-digital transformation G p89
Yates, R.E., Shieh, L.S., and Dib, H.M. see Shieh, L.S.
Yeo, S.P., Kooi, P.S., and Leong, M.S. see Kooi, P.S.
Yeo, S.P., and Cullen, A.L. see Cullen, A.L.
Young, P. The history of STC (Lecture) A p319
Young, S.J. Designing a conversational speech interface E p305
Yu, W., Majithia, J.C., and Wong, J.W. Performance of a trunk frame organisation for circuit/packet switching network F p73
Yue, L., and Chao, S.Y. SCNSOP: a switched-capacitor circuit simulation and optimisation program G p107
Yung, H.C., and Allen, C.R. Recursive addition and its parameterisation in VLSI G p256

Z

Zaengl, W.S., and Sato, S. see Sato, S.
Zaghloul, M.E., and Said, A.E. see Said, A.E.
Zamarro, J.M., Sanchez, M.C., Villalba, C.R., and Martin, E. see Sanchez, M.C.
Zeheb, E., Hertz, D., and Jury, E.I. see Hertz, D.
Zeheb, E., and Bose, N.K. see Bose, N.K.
Zeitoun, A.G., El-Morshedy, A., and Ghourab, M.M. see El-Morshedy, A.
Zhang, Z., Gary, C., Garabedian, R., Cristescu, D., and Enache, R. see Gary, C.
Zhong, G.-Q., and Ayrom, F. see Ayrom, F.

Addresses

Allen, D.H.O. Address as Chairman of the IEE Management & Design Division: Engineering for the market A p16
Bryson, Sir Lindsay Inaugural address: All at sea A p1
Burns, R.W. Address as Chairman of the IEE Science, Education & Technology Division: Seeing by electricity A p27
Collins, J.H. Address as Chairman of the IEE Electronics Division: 'Silicon Glen' — myth or reality? F p2
Lawrenson, P.J. Address as Chairman of the IEE Power Division: Ivory tower power B p1
Scott-Kerr, R.J. Address as Chairman of the IEE Computing & Control Division: The computing industry and the relevance of the IEE E p1

Acoustics (*see* Acoustoelectric effects and Sound broadcasting and audio)
Acoustoelectric effects
Active networks
Actuators (*see* Transducers)
Adaptive control
Algebra (incl. Matrix algebra) (*see* Mathematical techniques)
Algorithms (*see* Mathematical techniques)
Amplifiers
Analogue computers and computation
Analogue-digital conversion
Antennas
Antennas (active)
Antennas (adaptive)
Antennas (aperture)
Antennas (arrays)
Antennas (dipole)
Antennas (frequency inpendent)
Antennas (horns and feeds)
Antennas (measurements)
Antennas (microstrip)
Antennas (millimetre wave)
Antennas (reflectors)
Antennas (slot)
Antennas (theory)
Antennas (time domain)
Antennas (travelling wave)
Antennas (wire)
Arcing
Attenuators (*see* Instrumentation and measuring science)
Audio (*see* Sound broadcasting and audio)
Avionics
Batteries and cells
Biological effects
Biomass
Biomedical applications
Bipolar transistors
Boolean algebra (*see* Logic)
Breakdown and gas discharges
Cables and overhead lines (*see* Coaxial cables)
Calibration (*see* Instrumentation and measuring science)
Charge-coupled devices
Choppers (*see* Control equipment and applications)
Circuit breakers and circuit breaking
Circuit theory and design
Closed-loop systems
Coaxial cables (*see* Cables and overhead lines)
Coaxial components
Codes and decoding
Commutation
Components
Computer applications
Computer graphics
Computer simulation
Computer-aided design
Conductors and conductivity
Control equipment and applications
Control systems
Control theory
Convertors
Crosstalk
Cybernetics and robotics
Decoding (*see* Codes and decoding)
Delay lines
Demodulation (*see* Modulation)
Design
Detection
Dielectric materials
Digital arithmetic (*see* Digital computers and computation)
Digital circuits
Digital communication systems
Digital computers and computation
Digital control (*see* Digital computers and computation)
Digital instrumentation (*see* Instrumentation and measuring science)
Digital-analogue conversion
Diodes
Discharges, electric (*see* Arcing)
Discharges, gas (*see* Breakdown and gas discharges)
Distribution networks (*see* Power transmission)
Doping
Earthing (*see* System protection)
Eddy currents
Education and training
Educational projects
Electric shock (*see* Hazards)
Electrical machines
Electromagnetic compatibility
Electromagnetic theory
Electron devices
Electronic circuits (*see* Circuit theory and design)
Energy conversion and storage
Engineering and society
Engineering administration and management
Epitaxy
Errors and error analysis
Fault detection
Fault location
Feedback
Ferrites and ferromagnetics
Ferromagnetics (*see* Ferrites and ferromagnetics)
Fibres, optical (*see* Optics)
Field-effect transistors
Filters and filtering
Financial management
Fuel cells (*see* Batteries and cells)
Generators
Graph theory and topology
Gunn devices
Hazards
History (*see* Reviews of progress)
Holography (*see* Optics)
Hydroelectric power generation
Hysteresis
Image processing
Induction motors
Industrial applications of power (*see* Power utilisation and industrial applications)
Information and communication theory
Instrumentation and measuring science
Insulators and insulation
Integrated circuits (*see* Circuit theory and design)
Integrated optics (*see* Optics)
Interface states
Interference (*see* Noise and interference)
Inverters (*see* Power electronics)
Ionisation (*see* Breakdown and gas discharges)
Ionospheric propagation (*see* Radio-wave propagation)
Lasers
Lighting
Lightning and lightning protection
Linear motors
Linear networks (*see* Networks)
Load and voltage regulation
Logic
Long-term planning
Magnetic devices and properties
Magnetic fields
Management
Manufacturing
Mathematical techniques
Matrix algebra (*see* Mathematical techniques)
Measurement and measuring (*see* Instrumentation and measuring science)
Metal-insulator-semiconductor structures
Metal-oxide-semiconductor structures
Microprocessors
Microscopes
Microstrip and stripline
Microwave active components
Microwave circuits and networks
Microwave communications
Microwave heating
Microwave integrated circuits
Microwave measurements
Microwave passive components
Microwave systems
Microwave tubes
Millimetre wave devices and components
Modelling (*see* Simulation)
Modulation
Monitoring
Motors (*see* Induction motors, Linear motors, Reluctance motors, Stepping motors, Synchronous motors)
Motors, induction (*see* Induction motors)
Motors, linear (*see* Linear motors)
Motors, reluctance (*see* Reluctance motors)
Motors, stepping (*see* Stepping motors)
Motors, synchronous (*see* Synchronous motors)
Multivariable control systems (*see* Control equipment and applications)
Natural resources
Networks (*see* Telephone exchanges and networks)
Noise and interference
Nondestructive testing
Nonlinear optics
Nonlinear systems
Numerical analysis
Optical amplifiers
Optical cables
Optical fibres (*see* Optics)
Optical materials
Optical processing (*see* Signal processing and optics)
Optical sensors
Optical switching
Optical systems (*see* Optics)
Optical transmission (*see* Optics)
Optical waveguides
Optics
Optimal control
Optimisation
Optoelectronics
Oscillators (*see* Semiconductor devices and materials)
Overhead lines (*see* Cables and overhead lines)
Overvoltages (*see* System protection)
Pattern recognition (*see* Picture processing and pattern recognition)
Permittivity
Perturbation theory
Phasing and phase control
Photodetectors
Physical properties
Picture processing and pattern recognition
Plant condition monitoring
Plasmas
Poles and zeros
Polynomials (*see* Mathematical techniques)
Power conversion (*See* Transformers)
Power electronics
Power system protection (*see* System protection)
Power systems and plant
Power transmission and distribution (*see* Transmission and distribution plant)
Power utilisation and industrial applications
Process control (*see* Control theory)
Product design
Production engineering (*see* Project and production engineering)
Project and production engineering (*See* Engineering administration and management)
Propogation in random media
Pulse-code modulation
Quantum electronics
Radar and radionavigation
Radiation
Radio astronomy
Radio waves (*see* Radio-wave propagation)
Radio-wave propagation (ground wave)
Radio-wave propagation (ionospheric)
Radio-wave propagation (microwave)
Radio-wave propagation (millimetre wave)
Radio-wave propagation (terrain effects)
Radio-wave propagation (tropospheric)
Radiocommunication
Radionavigation (*see* Radar and radionavigation)
Radomes
Railway electrification and transportation
Receivers
Relays (*see* system protection)
Reliability
Reluctance motors
Remote sensing
Reviews of progress
Robotics (*see* Cybernetics and robotics)
Satellite links and space communication
Schottky-barrier devices
Semiconductor devices and materials (*see* Diodes, Thyristors and Transistors)
Semiconductor lasers
Servomotors
Signal processing
Simulation
Social responsibility
Solar cells (*see* Energy conversion and storage)
Solar power
Sonics and ultrasonics
Sound broadcasting and audio
Space communication (*see* Satellite links and space communication)
Speech synthesis
Stabilisers (*see* Stability)
Stability
Standardisation and standards
Stepping motors
Submillimetre systems
Superconductivity
Surface-acoustic-wave devices (SAW)
Switches and switching theory
Switchgear
Synchronous generators (*see* Generators)
Synchronous motors
System protection
Telecommunication (*see* Radiocommunication)
Telecommunication traffic (*see* Telecommunication)
Telemetry
Telephone exchanges and networks
Telephony
Teletext
Television
Thyristors (*see* Semiconductor devices and materials)
Tidal power
Topology (*see* Graph theory and topology)
Torque (*see* Motors)
Traction (*see* Railway electrification and transportation)
Transducers
Transformers
Transients
Transistors (*see* Semiconductor devices and materials)
Transmission and distribution plant (*see* Power transmission and distribution)
Transmission lines
Transmitters
Transportation (*see* Vehicles and transportation)
Tropospheric propagation (*see* Radiowave propagation)
Turbogenerators (*see* Generators)
Ultrasonics (*see* Sonics and ultrasonics)
Underground cables (*see* Cables and overhead lines)
Vehicles and transportation
Very large scale integration
Vibration
Vocoders (*see* Voice communication)
Voice communication
Voltage regulators (*see* Load and voltage regulation)
Waveguides and waveguide components
Wave power
Wind power (*see* Energy conversion and storage)
X-rays

Lectures

Bamford, W. Industrial electrical measuring instrument makers, 1890–1960: reminiscent review A p125
Carsberg, B. OFTEL: a new approach to regulation A p152
Marshall of Goring, Lord The 1985 Lord Nelson of Stafford Lecture Electricity in the UK A p119
Smith, Sir A. Engineering and industry — the hidden hunger A p630
Wheeldon, A.J. Identifying a product strategy A p623
Young, P. The history of STC A p319

IEE commissioned reviews

Barry, J.N., and George, R.G. Semiconductor memories E p8
Bickford, J.P., and Heaton, A.G. Transient overvoltages on power systems C p201
Callcut, V.A. Coppers for electrical purposes A p174
Davies, A.J. Discharge simulation A p217
Fischer, D. Interior Lighting B p115
Jordan, J.R. Correlation algorithms, circuits and measurement applications G p58 G d255
O'Connor, P.D.T., and Harris, L.N. Reliability prediction: a state-of-the-art review A p202
Westbrook, M.H. Automotive electronics A p241
van Wyk, J.D., Skudelny, H.-Ch., and Müller-Hellmann, A. Power electronics, control of the electromechanical energy conversion process and some applications B p369

Subject index

ACOUSTICS

Automatic determination of tone period and evaluation of dysphony in pathological voices. S. Feijóo and C. Hernández A p99
Directional response of a towed array in shallow sea. C. Karthikeyan F p138

ACTIVE NETWORKS

Multiple critical pole maximally flat *RC* active filter with sharp cutoff. P. Thajchayapong, C. Kimpan and Y. Rungsunseri G p285

ADAPTIVE CONTROL

A model reference adaptive control system for discrete multivariable bilinear systems with interconnected subsystems. M. de la Sen D p165
Adaptive controller with desired pole/zero assignment. C.-M. Lin and B.-S. Chen D p301
Adaptive decoupling of a class of multivariable dynamic systems using output feedback. M.O. Tade, M.M. Bayoumi and D.W. Bacon D p265
Design of a reduced-order adaptive observer. N. Minamide, P.N. Nikiforuk and M.M. Gupta D p133
Multivariable adaptive control of baker's yeast fermentation. D. Williams and P.A. Montgomery D p247
Multivariable adaptive controller for a turbogenerator. S.M.Z. Sharaf, B.W. Hogg, O.H. Abdalla and M.L. El-Sayed D p83
Online estimation and adaptive control of penicillin fermentation. G.A. Montague, A.J. Morris, A.R. Wright, M. Aynsley and A.C. Ward D p240

ALGORITHMS

Fundamental aspects of fault location algorithms used in distance protection. V. Cook C p359
Adaptive controller with desired pole/zero assignment. C.-M. Lin and B.-S. Chen D p301
Adaptive decoupling of a class of multivariable dynamic systems using output feedback. M.O. Tade, M.M. Bayoumi and D.W. Bacon D p265
Adaptive variable update rate algorithm for tracking targets with a phased array radar. S.A. Cohen F p277
Algorithmic determination of linear-feedback in a shift register for pseudorandom binary sequence generation. N.P. Cagigal and S. Bracho G p191
Application of modern control for biotechnological processes. A. Munack and M. Thoma D p194
Closed form approach to minimax design of 1-dimensional recursive digital filters. C. Charalambous G p121
Computer generation of topological equations and pseudocircuits for the self testing analogue fault diagnosis algorithm. C.-C. Wu and Y.-Y. Wu G p273
Constrained optimisation in the PECOD program. X.M. Xiao and Y.C. Shen G p159
Doubly co-operative ternary sequences. K. Venkata Rao, P.S. Moharir and S.K. Varma F p61
Dynamic allocation of degrees of freedom in an adaptive antenna. J.E. Hudson H p34
Easy generation of small-*N* discrete Fourier transform algorithms. R. Stasiński G p133
Identification and control of an extruder using multivariable algorithms. L.W. Bezanson and S.L. Harris D p145
Microprocessor based polarity correlation using the skip algorithm. J.R. Jordan, B. Kiani-Shabestari and M. Napthine G p227
New algorithm for transient suppression for images due to incomplete or partial boundary data. G. Eichmann and L.M. Roytman G p27
Numerically reliable software for control: the SLICE library. T.W.C. Williams D p73
Optimal thermal unit scheduling using improved dynamic programming algorithm. S.D. Bond and B. Fox C p1
Parallel algorithm for shortest paths. R.K. Ghosh and G.P. Bhattacharjee E p87
Processor failure recovery for a resource sharing algorithm. I.A. Newman, R.P. Stallard and M.C. Woodward E p79
Recursive addition and its parameterisation in VLSI. H.C. Yung and C.R. Allen G p256
Regulation and control effort in self-tuning controllers. M.A. Magdy and T.S. Ng D p289
Representation and transient behaviour of self-tuning controller for deterministic disturbances. T.S. Ng and M.A. Magdy D p285
Self-tuning control of offset using a moving average filter. C.S. Berger D p184
Shifted Legendre approach to the analysis and identification of a linear delayed system with a nonlinear gain. D.-H. Shih and F.-C. Kung D p127
Simultaneous estimation of state variables and parameters for multivariable linear systems with singular pencil models. Y.C. Chen, J.D. Aplevich and W.J. Wilson D p65
Spectral testing of circuit realisations based on linearisations. E. Eris and J.C. Muzio E p73
Swing busbar reactive power generation constraints in power flow calculations. P.B. Prada C p186
Use of multiplexers in direct synthesis of ASM-based designs. D.H. Green and M.A. Chughtai E p194

AMPLIFIERS

Computer-aided design of microwave amplifiers by the random addition of new components. K. Anvari and A.J. Baden Fuller H p395
Development of spacecraft solid-state high-power L-band amplifiers. C.D. Seymour F p326
Improved computer-aided design of amplifiers using feedback concepts. D.J.H. Maclean H p428
Large-signal field analysis of an O-type travelling wave amplifier. Part 2: Numerical results. N. Kalyanasundaram and R. Chinnadurai I p163

ANTENNAS

Bistatic and multistatic radar (Editorial). C. Pell and E. Hanle F p585
Crosscorrelation between the envelopes of 900 MHz signals received at a mobile radio base station site. F. Adachi, M.T. Feeney, A.G. Williamson and J.D. Parsons F p506
Dynamic allocation of degrees of freedom in an adaptive antenna. J.E. Hudson H p34
Multibeam SS-TDMA design considerations related to the Olympus Specialised Services Payload. N. Watt F p319

ANTENNAS (ADAPTIVE)

Adaptive array processing using the Davies beamformer. C.C. Ko H p467
Experimental HF circular array with direction finding and null steering capabilities. N. Karavassilis, D.E.N. Davies and C.G. Guy H p147
Fast allocation of degrees of freedom in an adaptive antenna. J.E. Hudson H p507
Transformation of linearly constrained broadband processors to unconstrained partitioned form. M.H. Er and A. Cantoni H p209

ANTENNAS (APERTURE)

General dielectric-lens shaping using complex co-ordinates. B.S. Westcott and F. Brickell H p122
Prediction of the Fresnel region field of a compact antenna test range with serrated edges. P.A. Beeckman H p108
Thin dielectric lens reflector. S. Cornbleet H p288

ANTENNAS (ARRAYS)

Analysis of two-dimensional circular-cylinder-array scatterers. Desen Fan H p322
Dual frequency antenna integration using invisible grating structures. K. Bond and M.W. Shelley H p137
Experimental HF circular array with direction finding and null steering capabilities. N. Karavassilis, D.E.N. Davies and C.G. Guy H p147
Improved design of series-fed circularly polarised printed linear arrays. K. Ito, K. Itoh and H. Kogo H p462
Nonuniformly spaced slot array antenna with low sidelobe pattern. Y. Tsunoda and N. Goto H p155
Satellite-borne active phased array techniques for mobile communications. P.G. Sheehan and J.R. Forrest F p339

ANTENNAS-(DIPOLE)

Exact image method for field calculation in horizontally layered medium above a conducting ground plane. E. Alanen, I.V. Lindell and A.T. Hujanen H p297

ANTENNAS (MEASUREMENTS)

Antenna near-field measurements using directive probes. K.S. Farhat and J.C. Bennett H p26
Prediction of the Fresnel region field of a compact antenna test range with serrated edges. P.A. Beeckman H p108

ANTENNAS (MICROSTRIP)

Dual frequency antenna integration using invisible grating structures. K. Bond and M.W. Shelley H p137
Exact image method for field calculation in horizontally layered medium above a conducting ground plane. E. Alanen, I.V. Lindell and A.T. Hujanen H p297
Microstrip elements and arrays with spherical dielectric overlays. J.R. James, C.M. Hall and G. Andrasic H p474
Multioctave bandwidth log-periodic microstrip antenna array. P.S. Hall H p127

Simple analysis and design of annular ring microstrip antennas. S.E. El-Khamy, R.M. El-Awadi and E.A. El-Sharawy H p198

ANTENNAS (REFLECTORS)

Blockage due to subreflector supports in large radiotelescope antennas. J.W. Lamb and A.D. Olver H p43
Comparison of three cross-polarisation prediction methods for reflector antennas. H. Bach and H. Viskum H p325
Direct far-field GO synthesis of shaped beam reflector antennas. M. Mehler, S. Tun and N. Adatia J p213
Dual reflector antennas with amplitude, phase or Abbé conditions. S. Cornbleet and G. Smith H p221
Geometrical theories of wave propagation: a contemporary review. J.M. Arnold J p165
New method to evaluate the Fourier transform of a two-dimensional window function with piecewise continuous boundaries. Application in antenna theory. P.A. Beeckman H p291
Recent developments in the analysis of reflector antennas. A review. G. Francheschetti and A. Mohsen H p65
Scattering of an arbitrary wave by a thin strip grating reflector. M. Ando, A. Kondo and K. Kagoshima H p203
Synthesis of dual-offset shaped reflectors for arbitrary aperture shapes using continuous domain deformation. B.S. Westcott, R.K. Graham and I.C. Wolton H p57
Thin dielectric lens reflector. S. Cornbleet H p288

ANTENNAS (SLOT)

Experimental study of a slotted telemetry antenna array with a shaped beam for satellite communication. S.P. Mathur, A.K. Sinha and A.K. Sinha H p490
Mutual admittance between slots on a cylinder using the extended Poynting vector method. E.V. Sohtell H p238
Nonuniformly spaced slot array antenna with low sidelobe pattern. Y. Tsunoda and N. Goto H p155

ANTENNAS (THEORY)

Analysis of two-dimensional circular-cylinder-array scatterers. Desen Fan H p322
General dielectric-lens shaping using complex co-ordinates. B.S. Westcott and F. Brickell H p122
New method to evaluate the Fourier transform of a two-dimensional window function with piecewise continuous boundaries. Application in antenna theory. P.A. Beeckman H p291

ANTENNAS (WIRE)

Scattering of an arbitrary wave by a thin strip grating reflector. M. Ando, A. Kondo and K. Kagoshima H p203

ARCING

Corona, breakdown and humidity in the rod-plane gap. N.L. Allen A p562
Double impulse tests of long airgaps Part 1. Engineering problems and physical processes: the basis of recent tests. Les Renardières Group A p395
Double-impulse tests of long airgaps Part 2. Leader decay and reactivation. Les Renardières Group A p410
Double-impulse tests of long airgaps Part 3. Voltage front perturbation effects. Les Renardières Group A p438
Double-impulse tests of long airgaps Part 4. Effects of pre-existing space charge on positive discharge development. Les Renardières Group A p469
Electrical test results of UHV airgaps and insulator configurations. C.L. Nellis, S.H. Sarkinen and D.A. Bradley A p493
Multiple electric discharges. J.E. Harry and R. Knight A p50
Observation of corona phenomena at very high direct voltages. T.E. Allibone and J.C. Saunderson A p569
Statistical design of large UHV electrodes in air. W. Mosch, M. Dietrich, E. Lemke and W. Hauschild A p547
Suppression of the high-frequency disturbances in low-voltage circuits caused by disconnector operation in high-voltage open-air substations. M.S. Savic C p293
Switching-impulse strength of the external insulation of three-phase power transformers. H. Studinger and K.-H. Weck A p534
UHV air insulation:physical and engineering research (Editorial). R.T. Waters p. 393. A p393

AVIONICS

Military aeronautical satellite communications. D. Cummings and C.G. Wildey F p411

BATTERIES AND CELLS

Drive system design philosophy for mass minimisation of battery-powered vehicles. H.R. van Niekerk B p49 B e154
Factors affecting the design and operation of redox batteries. K.E. Mosley A p375
High-efficiency on-board battery charger with transformer isolation, sinusoidal input current and maximum power factor. J.Ch. Bendien, G. Fregien and J.D. van Wyk B p197

BIOLOGICAL EFFECTS

Control in bioprocessing (Editorial). J.R. Leigh and M. Thoma p. 193. J.R. Leigh and M. Thoma D p193

BIOMASS

Development of strategies for online estimation of biomass and secondary product formation in growth-limited batch fermentations. L.A. Tarbuck, M.H. Ng, J. Tampion and J.R. Leigh D p235
Identification, estimation and control of biological waste-water treatment processes. M.B. Beck D p254
Multivariable adaptive control of baker's yeast fermentation. D. Williams and P.A. Montgomery D p247
Online estimation and adaptive control of penicillin fermentation. G.A. Montague, A.J. Morris, A.R. Wright, M. Aynsley and A.C. Ward D p240
Yeast population models for monitoring and control of biotechnical processes. L. Mariani, E. Martegani and L. Alberghina D p210

BIOMEDICAL APPLICATIONS

A new microcomputer-based online ocular artefact removal (OAR) system. E.C. Ifeachor, B.W. Jervis, E.L. Morris, E.M. Allen and N.R. Hudson A p291
An electronic Doppler signal generator for assessing continuous-wave ultrasonic Doppler flowmeters. R.H. Smallwood and P. Dixon A p104
Automatic determination of tone period and evaluation of dysphony in pathological voices. S. Feijóo and C. Hernández A p99
Biomedical engineering approach of pharmacokinetic problems: computer-aided design in pharmacokinetics and bioprocessing. A. Segui, J.P. Lebaron and R. Leverge D p217
Electrostatic discharges from the human body. W.P. O'Neill and B.R. Varlow A p606
Engineering for the market. D.H.O. Allen A p16
Mathematical description of the behaviour of *Chaetomium cellulolyticum*: modelling of the growth on glucose and cellulose substrate. W. Scheiding, M. Thoma, V. Hecht, W. Rosen and K. Schügerl D p199
Microprocessor-controlled multichannel STAT analyser. M.S. Sheya, C. Riley and R.L. Grimsdale A p94
Phase computer at 2.5 GHz. M. Baribaud, J.C. Caerou and M. Kamarei H p183

BIPOLAR TRANSISTORS

Accurate bias dependent linear model for bipolar transistors up to 6 GHz. K. Bharath Kumar, R. Krishnapur and T.B. Mondal I p214

BREAKDOWN AND GAS DISCHARGES

Corona, breakdown and humidity in the rod-plane gap. N.L. Allen A p562
Double impulse tests of long airgaps Part 1. Engineering problems and physical processes: the basis of recent tests. Les Renardières Group A p395
Double-impulse tests of long airgaps Part 2. Leader decay and reactivation. Les Renardières Group A p410
Double-impulse tests of long airgaps Part 3. Voltage front perturbation effects. Les Renardières Group A p438
Double-impulse tests of long airgaps Part 4. Effects of pre-existing space charge on positive discharge development. Les Renardières Group A p469
Model of the formation of a dry band on an NaCl-polluted insulation. C. Texier and B. Kouadri A p285
Multiple electric discharges. J.E. Harry and R. Knight A p50
Observation of corona phenomena at very high direct voltages. T.E. Allibone and J.C. Saunderson A p569
Similarities between electron emission and consequent breakdown processes in high-pressure gases and in vacuum. A.E. Guile, R.V. Latham and A.E.D. Heylen A p280
Statistical design of large UHV electrodes in air. W. Mosch, M. Dietrich, E. Lemke and W. Hauschild A p547
Study of airgap breakdown characteristics under ambient conditions of reduced air density. A.J. Eriksson, B.C. le Roux, H.J. Geldenhuys and D.V. Meal A p485
UHV air insulation:physical and engineering research (Editorial). R.T. Waters p. 393. A p393

CABLES AND OVERHEAD LINES

A new monitor for pollution on power line insulators. Part 1: Design, construction and preliminary tests. S.E.-D. Habib and M. Khalifa C p105
Calculations of power cable load capability on a desktop computer: a review. G.J. Anders, M.A. El-Kady, R.W.D. Ganton, D.J. Horrocks and J. Motlis C p431
Faults in parallel cables. C. Showghi C p270
Jamuna River 230 kV crossing, Bangladesh—Pt. 1: Design. J.A. Chandler, L.W. Hinch, D.A. Hughes, D.M. McDowell, P.W. Rowe and A.B. Wood C d226
Jamuna River 230 kV crossing, Bangladesh—Pt. 2: Construction. J.A. Chandler, L.W. Hinch, R.I. Fair, D.A. Hughes, J. Peraino and P.W. Rowe C d226
Optimising the design of low-voltage cable networks. F.W. Walkden C p49

CHARGE-COUPLED DEVICES

Acousto-optic ambiguity function processor. R.J. Sadler and M.R. Buttinger J p35
Concepts and techniques for real-time optical synthetic aperture radar data processing. C.D. Daniel J p7

CHOPPERS

Applications of a power chopper to the thyristor Scherbius. K. Taniguchi and H. Mori B p225

CIRCUIT THEORY AND DESIGN

Analysis and synthesis of static power convertors. D. Levy and E. McQuade G p39
Approximate method for hand computation of nonlinear distortion performance of varactor tuning circuits. M.T. Abuelma'atti G p265
Automatic verification of asynchronous circuits using temporal logic. D.L. Dill and E.M. Clarke E p276
Behavioural description and VLSI verification. G.J. Milne E p127 I p87
Cell-based design: a review. J. Fox E p117 I p77
Closed form approach to minimax design of 1-dimensional recursive digital filters. C. Charalambous G p121
Constrained optimisation in the PECOD program. X.M. Xiao and Y.C. Shen G p159
Design of a reliable and self-testing VLSI datapath using residue coding techniques. I.L. Sayers, D.J. Kinniment and E.G. Chester E p169 I p129
Design of low intersymbol interference partial response data transmission filters. A. Adama and L.F. Lind G p195
Designing active filters with linear transformations using off-the-shelf building blocks. J.A. Papadakis G p216
Direct analysis of stray-insensitive switched-capacitor networks using signal flow graphs. G.S. Moschytz and J.J. Mulawka G p145
Early history of the high-fidelity finite-impulse-response filter. R.H. Wilkinson G p243
Exact discrete time synthesis. H.M. Yassine G p209
Formal hardware verification methodology and its application to a network interface chip. M.J.C. Gordon and J. Herbert E p255
High-speed encoder for the 16B9Q line code. A.H. Prystajecky, P.A. Goud and C.G. Englefield G p115
Low-noise power-efficient oscillators: theory and design. J.K.A. Everard G p172

Method to design FIR Hilbert transformers for delta modulated signals. V. Anastassopoulos and T. Deliyannis G p113
Multimemory block structure for implementing a digital adaptive filter using distributed arithmetic. C.-H. Wei and J.-J. Lou G p19
Multiple critical pole maximally flat *RC* active filter with sharp cutoff. P. Thajchayapong, C. Kimpan and Y. Rungsunseri G p285
Multiple fault location in AC circuits. J. Rutkowski and A. Macura G p279
Multiple-loop-feedback switched-capacitor filters using approximating biquads. S. Fotopoulos and T. Deliyannis G p84
Placement expanding autolayout router. H.K.E. Liesenberg and D.J. Kinniment I p55
Precise insensitive tunable *RC*-oscillator realisation using current conveyors. R. Nandi G p129
Rectifier circuit performance: some new approximate formulas. Addendum. A.G. Bogle G p128
SCNSOP: a switched-capacitor circuit simulation and optimisation program. L. Yue and S.Y. Chao G p107
Simple automatic current/voltage characteristics plotter for solar cells and arrays. G. Bhattacharya and H. Saha G p289
State-space switched capacitor filter design based on single-operational-amplifier biquads. V.I. Georgiev and K.P. Stantchev G p251
Stray-free switched-capacitor general biquad blocks. A.E. Said and M.E. Zaghloul G p154
Structured approaches to design. B.J Darby and D.W.R. Orton E p123 I p83
Synthesis of non-series-parallel *LC* one-port networks. B. Shahzadi G p181 G e250
Two new Miller theorems. C. Miron, P. Ogrutan and E. Wardegger G p271
Use of multiplexers in direct synthesis of ASM-based designs. D.H. Green and M.A. Chughtai E p194
Use of time functions to describe and explain circuit behaviour. P. Amblard, P. Caspi and N. Halbwachs E p271

CLOSED-LOOP SYSTEMS

On nonsingular value based design of controllers for robust stability. O.D.I. Nwokah D p57

COAXIAL CABLES

Electronic tuning of high-Q VHF cavity resonators. D.P. Howson and M.S. Mahmoud H p159
Prediction of leakage from single braid screened cables. P.A. Cudd, F.A. Benson and J.E. Sitch A p144

CODES AND DECODING

Bounded distance coset decoding of convolutional codes. J.M. Jensen and I.S. Reed F p488
Combination of cancelling intersymbol interference and decoding of error-correcting code. R. Kohno, S. Pasupathy, H. Imai and M. Hatori F p224
Design of a reliable and self-testing VLSI datapath using residue coding techniques. I.L. Sayers, D.J. Kinniment and E.G. Chester E p169 I p129
Equivalent linear span analysis of binary sequences having an interleaved structure. S. Prasad and L.C. Quynh F p288
Error correction in a reversed communications scenario. B. Arazi F p562
New class of sequence sets with good auto- and crosscorrelation functions. L.C. Quynh and S. Prasad F p281
Reduced search soft-decision minimum-distance decoding for binary block codes. M.A. El-Agamy and E. Munday F p34
Secret-hardware public-key cryptography. S.C. Kak E p94
Synchronisation process for the variable-length T-codes. M.R. Titchener and J.J. Hunter E p54

COMMUNICATION SYSTEMS THEORY

Use of pseudo-error monitoring schemes in optical communications. P.A. Davies and M. Sherif J p371

COMMUTATION

Simple new PWM patterns for thyristor three-phase AC/DC convertors. S.K. Biswas, M.S. Mahesh and B.S.R. Iyengar B p354

COMPONENTS

Coppers for electrical purposes. V.A. Callcut A p174
Developments in hydro-electric generator components. W. Kellenberger C p137
Phase modulated 3-phase pole changing windings. A.R.W. Broadway and K.S. Ismail B p61

COMPUTER APPLICATIONS

A new microcomputer-based online ocular artefact removal (OAR) system. E.C. Ifeachor, B.W. Jervis, E.L. Morris, E.M. Allen and N.R. Hudson A p291
Application of modern control for biotechnological processes. A. Munack and M. Thoma D p194
Calculations of power cable load capability on a desktop computer: a review. G.J. Anders, M.A. El-Kady, R.W.D. Ganton, D.J. Horrocks and J. Motlis C p431
Controllers for LQG self-tuning applications with coloured measurement noise and dynamic costing. M.J. Grimble D p19
Developments in phase-variable modelling for thyristor-controlled reactive-power compensators. W.D. Humpage and T.T. Nguyen C p277
Editorial: Systems on silicon. A.P. Dorey E p105 I p65
Efficient parallel processing technique for inverting matrices with random sparsity. R. Betancourt E p235
Flexible communication structure for distributed embedded systems. M. Sloman, J. Kramer, J. Magee and K. Twidle E p201
Frequency tracking for power system control. S.A. McIlwaine, C.E. Tindall and W. McClay C p95
Image reconstruction using the transputer. N. Kingswood, E.L. Dagless, R.M. Belchamber, D. Betteridge, T. Lilley and J.D.M. Roberts E p139 I p99
Ineffectiveness of transmission line transpositions at harmonic frequencies. J. Arrillaga, E. Acha, T.J. Densem and P.S. Bodger C p99
Logic programs and an experimental architecture for their execution. J.V. Oldfield E p163 I p123
Low-frequency electrical characteristics of fresh concrete. H.W. Whittingon and J.G. Wilson A p265
Microprocessor-controlled multichannel STAT analyser. M.S. Sheya, C. Riley and R.L. Grimsdale A p94
Optimal thermal unit scheduling using improved dynamic programming algorithm. S.D. Bond and B. Fox C p1
Semi-rigorous thermal unit commitment for large scale electrical power systems. E. Khodaverdian, A. Brameller and R.M. Dunnett C p157
The computing industry and the relevance of the IEE. R.J. Scott-Kerr E p1

COMPUTER GRAPHICS

New Hermite cubic interpolator for two-dimensional curve generation. R. Szeliski and M.R. Ito E p341

COMPUTER SIMULATION

Effective 3-dimensional electric field calculation by surface charge simulation method. S. Sato and W.S. Zaengl A p77
Representation and transient behaviour of self-tuning controller for deterministic disturbances. T.S. Ng and M.A. Magdy D p285
SCNSOP: a switched-capacitor circuit simulation and optimisation program. L. Yue and S.Y. Chao G p107
Stable reduced-order models for discrete-time systems. M. Farsi, K. Warwick and M. Guilandoust D p137

COMPUTER-AIDED DESIGN

APL: an effective design language. M. van Sinderen, C. Huijs and G.A. Blaauw E p100
Biomedical engineering approach of pharmacokinetic problems: computer-aided design in pharmacokinetics and bioprocessing. A. Segui, J.P. Lebaron and R. Leverge D p217
Computer optimisation of circuits applied to the modelling of microwave IC passive components. A.J. Baden Fuller H p411
Computer-aided design of MMIC structures. W. McKenzie, D.M. Barry, C.M. Snowden and M.J. Howes H p405
Computer-aided design of MMICs based on physical device models. C.M. Snowden H p419
Computer-aided design of microwave amplifiers by the random addition of new components. K. Anvari and A.J. Baden Fuller H p395
Constrained optimisation in the PECOD program. X.M. Xiao and Y.C. Shen G p159
Frequency domain continuation method for the analysis and stability investigation of nonlinear microwave circuits. D. Hente and R.H. Jansen H p351
Functional analysis of nonlinear circuits: a generating power series approach. M. Lamnabhi H p375
Improved computer-aided design of amplifiers using feedback concepts. D.J.H. Maclean H p428
Large-signal FET simulation using time domain and harmonic balance methods. T. Brazil, S. El-Rabaie, E. Choo, V. Fusco and C. Stewart H p363
Matching of GaAs power FETs using a large-signal modelling technique. A.J. Holden, B.T. Debney, J.P. King, J.G. Metcalfe and C.H. Oxley H p399
Method for calculating the properties of coupled-cavity slow-wave structures from their dimensions. R.G. Carter and Liu Shunkang H p330
Modal S-matrix method for the optimum design of inductively direct-coupled cavity filters. F. Arndt, J. Bornemann, D. Heckmann, C. Piontek, H. Semmerow and H. Schueler H p341
Modelling the DC characteristics of VMOS power transistors for computer-aided design. M.T. Abuelma'atti I p161
Modes on a four-conductor line. B. Climer H p392
SCNSOP: a switched-capacitor circuit simulation and optimisation program. L. Yue and S.Y. Chao G p107
Simple models for high-frequency MESFETs and comparison with experimental results. C.H. Oxley and A.J. Holden H p335
Use of condensed and symmetrical TLM nodes in computer-aided electromagnetic design. P.B. Johns H p368
User-oriented software package for the analysis and optimisation of nonlinear microwave circuits. V. Rizzoli, C. Cecchetti, A. Lipparini and A. Neri H p385
Workshop on integrated CAD and workstations, 1985 Systems on silicon seminar. D. Renshaw E p181
Workshop on integrated CAD and workstations, 1985 Systems on silicon seminar. D. Renshaw I p141

CONDUCTORS AND CONDUCTIVITY

Coppers for electrical purposes. V.A. Callcut A p174
Exact solutions for Debye-like relaxations in multilayered conducting dielectrics. R. Ongaro A p275
Overhead distribution lines — some reflections on design. G. Orawski, J. Bradbury and M.J. Vanner C p409

CONTROL EQUIPMENT AND APPLICATIONS

A model reference adaptive control system for diacrete multivariable bilinear systems with interconnected subsystems. M. de la Sen D p165
Application of an extended Kalman filter for state estimation of a yeast fermentation. K.-H. Bellgardt, W. Kuhlmann, H.-D. Meyer, K. Schügerl and M. Thoma D p226
Applications of a power chopper to the thyristor Scherbius. K. Taniguchi and H. Mori B p225
Biomedical engineering approach of pharmacokinetic problems: computer-aided design in pharmacokinetics and bioprocessing. A. Segui, J.P. Lebaron and R. Leverge D p217
Chaos in Chua's circuit. F. Ayrom and G.-Q. Zhong D p307
Comments on design of delayed control systems using Zakian's framework. A.T. Bada D d313
Control laws for systems with inequality models of uncertainty. A. Świerniak D p153
Controllers for LQG self-tuning applications with coloured measurement noise and dynamic costing. M.J. Grimble D p19
Development of strategies for online estimation of biomass and secondary product formation in growth-limited batch fermentations. L.A. Tarbuck, M.H. Ng, J. Tampion and J.R. Leigh D p235
Fixed-wing-angle BTT control. D.J. Roddy and G.W. Irwin D p111
Frequency tracking for power system control. S.A. McIlwaine, C.E. Tindall and W. McClay C p95
Identification, estimation and control of biological waste-water treatment processes. M.B. Beck D p254
Modelling and identification of a stochastic water-quality system using actual data. K.A.F. Moustafa, M.Y. Gaafar and T. Abu-El-Yazid D p159

Multivariable adaptive control of baker's yeast fermentation. D. Williams and P.A. Montgomery D p247
Multivariable adaptive controller for a turbogenerator. S.M.Z. Sharaf, B.W. Hogg, O.H. Abdalla and M.L. El-Sayed D p83
On nonsingular value based design of controllers for robust stability. O.D.I. Nwokah D p57
Online estimation and adaptive control of penicillin fermentation. G.A. Montague, A.J. Morris, A.R. Wright, M. Aynsley and A.C. Ward D p240
Optimal deconvolution smoother. T.J. Moir D p13
Two-dimensional discrete model with varying coefficients. W. Marszalek D p177
Yeast population models for monitoring and control of biotechnical processes. L. Mariani, E. Martegani and L. Alberghina D p210

CONTROL SYSTEMS

Automotive electronics. M.H. Westbrook A p241
Comments on design of delayed control systems using Zakian's framework. A.T. Bada D d313
Control laws for systems with inequality models of uncertainty. A. Świerniak D p153
Control of hydro-electric plant. E.G. Davidson C p145
Controllers for LQG self-tuning applications with coloured measurement noise and dynamic costing. M.J. Grimble D p19
Identification of finite-order models of distributed systems. I.F. Taylor D p276
Model reduction of discrete systems using the power decomposition method and the system identification method. C.M. Liaw, C.T. Pan and M. Ouyang D p30
Modelling and identification of a stochastic water-quality system using actual data. K.A.F. Moustafa, M.Y. Gaafar and T. Abu-El-Yazid D p159
New PWM switching strategy for microprocessor controlled inverter drives. S.R. Bowes and A. Midoun B p237
Numerically reliable software for control: the SLICE library. T.W.C. Williams D p73
On decentralised eigenvalue assignment for large-scale systems with dynamic interconnections. A. El-Kashlan and M. El-Geneidy D p121
Principal direction alignment: a geometric framework for the complete solution to the μ-problem. R.W. Daniel, B. Kouvaritakis and H. Latchman D p45
Separation of matrix eigenvalues and structural decomposition of large-scale systems. L.S. Shieh, H.M. Dib and R.E. Yates D p90
Stable reduced-order models for discrete-time systems. M. Farsi, K. Warwick and M. Guilandoust D p137
Two-dimensional discrete model with varying coefficients. W. Marszalek D p177

CONTROL THEORY

A note on frequency-response measurement. J.L. Douce D p189
Analysis of singular systems using orthogonal functions. P.N. Paraskevopoulos D d192 D d315
Comments on design of delayed control systems using Zakian's framework. A.T. Bada D d313
Control in bioprocessing (Editorial). J.R. Leigh and M. Thoma p. 193. J.R. Leigh and M. Thoma D p193
Controllers for LQG self-tuning applications with coloured measurement noise and dynamic costing. M.J. Grimble D p19
Fixed-wing-angle BTT control. D.J. Roddy and G.W. Irwin D p111
Identification of finite-order models of distributed systems. I.F. Taylor D p276
Mathematical description of the behaviour of *Chaetomium cellulolyticum*: modelling of the growth on glucose and cellulose substrate. W. Scheiding, M. Thoma, V. Hecht, W. Rosen and K. Schügerl D p199
On decentralised eigenvalue assignment for large-scale systems with dynamic interconnections. A. El-Kashlan and M. El-Geneidy D p121
On the analysis of singular systems using orthogonal functions. G.T. Kekkeris D p315
On the controllability of a class of nonlinear systems with time-varying multiple delays in control. K. Balachandran D p297
On using orthogonal functions for the analysis of singular systems. W. Marszalek D d192 D d315
On using orthogonal functions with singular systems. S.L. Campbell D d192 D d315
Optimal deconvolution smoother. T.J. Moir D p13
Principal direction alignment: a geometric framework for the complete solution to the μ-problem. R.W. Daniel, B. Kouvaritakis and H. Latchman D p45
Regulation and control effort in self-tuning controllers. M.A. Magdy and T.S. Ng D p289
Reply to comments on a simplified analytical stability test for systems with delay. D. Hertz, E.I. Jury and E. Zeheb D d142
Simplified analytical stability test for systems with delay. D. Hertz, E.I. Jury and E. Zeheb D d142
The computing industry and the relevance of the IEE. R.J. Scott-Kerr E p1
Two-dimensional discrete model with varying coefficients. W. Marszalek D p177

CONVERTORS

A capacitor bank charger using a high frequency resonant circuit. S.A. Mirbod and W.G. Dunford B e30
Analysis and synthesis of static power convertors. D. Levy and E. McQuade G p39
Analysis of microstrip slotline ring 3dB directional couplers. J. Chramiec and A.M. Glass H p187
Comprehensive calculation of convertor harmonics with system impedances and control representation. R. Yacamini and J.C. de Oliveira B p95
How HVDC schemes can excite torsional oscillations in turbo-alternator shafts. R. Yacamini C p301
Modelling and analysis of the Ćuk convertor using the discrete impulse response method. L. Martinez, A. Poveda and J.M. Miguel G p77
Power electronics, control of the electromechanical energy conversion process and some applications. J.D. van Wyk, H.-Ch. Skudelny and A. Müller-Hellmann B p369
RF power injected into the DC yard by an HVDC convertor pole. R.V. De'/ore and E.P. Bohley C e80
Simple new PWM patterns for thyristor three-phase AC/DC convertors. S.K. Biswas, M.S. Mahesh and B.S.R. Iyengar B p354
Thyristor controlled reactors as harmonic sources in HVDC convertor stations and AC systems. R. Yacamini and J.W. Resende B p263

DECODING

Bounded distance coset decoding of convolutional codes. J.M. Jensen and I.S. Reed F p488

DELAY LINES

Closed-loop autocorrelator and its application to frequency discrimination. H. Messer and Y. Bar-Ness F p25

DEMODULATION

Low-power integrable paging receiver architecture. C.B. Marshall F p449

DESIGN

A two-stage output feedback design. M.S. Mahmoud, Y. Chen and M.G. Singh D p279
Design and development of public distribution supply systems. H. Hammersley C p370
Design and operation perspective of a British UHV laboratory. H.M. Ryan and J. Whiskard A p501
Design and verification of regular synchronous circuits. M. Sheeran E p295
Designing active filters with linear transformations using off-the-shelf building blocks. J.A. Papadakis G p216
Economic design of a 50 kVA distribution transformer. Part 1: The use of liquids of low flammability. D.F. Binns, A.B. Crompton and A. Jaberansari C p445
Economic design of a 50 kVA distribution transformer. Part 2: Effect of different core steels and loss capitalisations. D.F. Binns, A.B. Crompton and A. Jaberansari C p451
Factors affecting the design and operation of redox batteries. K.E. Mosley A p375
Multiple critical pole maximally flat *RC* active filter with sharp cutoff. P. Thajchayapong, C. Kimpan and Y. Rungsunseri G p285
Novel technique for the design of induction billet heaters. A.K.M. Al-Shaikhli and L. Hobson B p323
Overhead distribution lines — some reflections on design. G. Orawski, J. Bradbury and M.J. Vanner C p409
State-space switched capacitor filter design based on single-operational-amplifier biquads. V.I. Georgiev and K.P. Stantchev G p251

DETECTION

Assessment of Kalman-filter channel estimators for an HF radio link. A.P. Clark and R. Harun F p513
Bistatic and multistatic radar (Editorial). C. Pell and E. Hanle F p585
Bistatic/multistatic radar bibliography. E. Hanle, A. Farina and C. Pell F p664
Cell-averaging CFAR for multiple-target situations. B. Barboy, A. Lomes and E. Perkalski F p176
Coherent radar detection in log-normal clutter. A. Farina, A. Russo and F.A. Studer F p39
Comparison of adaptive cell-averaging detectors for multiple-target situations. E.K. Al-Hussaini and B.M. Ibrahim F p217
Discharge detection techniques for stator windings. A. Wilson, R.J. Jackson and N. Wang B d112
Distributed detection of Swerling targets. R. Srinivasan, P. Sharma and V. Malik F p624
Distributed radar detection theory. R. Srinivasan F p55
Optimisation philosophy of acquisition process for tracking radar. Wang Li and Qiao Xiaolin F p493
Overview of detection theory in multistatic radar. E. D'Addio and A. Farina F p613
Performance comparison of detection methods derived from maximum-likelihood sequence estimation. A.D. Fagan and F.D. O'Keane F p535
Waveform design and Doppler sensitivity analysis for nonlinear FM chirp pulses. J.A. Johnston and A.C. Fairhead F p163

DIELECTRIC MATERIALS

Automatic technique for the characterisation of a dielectric resonator coupled to a microstrip line. M.C. Sanchez, C.R. Villalba, J.M. Zamarro and E. Martin H p99
Circular cylindrical cavity loaded with a dielectric sleeve for Gunn-effect oscillator stabilisation application. P.S. Kooi, M.S. Leong and S.P. Yeo H p259
Computation of the electric field at a solid/gas interface in the presence of surface and volume charges. S.I. Bektas, O. Farish and M. Hizal A p577
Exact solutions for Debye-like relaxations in multilayered conducting dielectrics. R. Ongaro A p275
Influence of an airgap on the measurement of dielectric constant by a parallel-plate dielectric resonator. D. Kajfez, W.P. Wheless and R.T. Ward H p253 H e340
Propagation in a doubly periodic dielectric guide. S.L. Arambepola and J.R. Cozens J p332
The influence of vibration on the initiation of trees in dielectrics. M.N. Arbab and D.W. Auckland A p618

DIGITAL CIRCUITS

Design and verification of regular synchronous circuits. M. Sheeran E p295
Design of a reliable and self-testing VLSI datapath using residue coding techniques. I.L. Sayers, D.J. Kinniment and E.G. Chester E p169 I p129
Digital filter functions with short coefficients. J.J. Narraway and R. Venkatesan G p30
Kharitonov's theorem and stability test of multidimensional digital filters. N.K. Bose and E. Zeheb G p187
Multimemory block structure for implementing a digital adaptive filter using distributed arithmetic. C.-H. Wei and J.-J. Lou G p19
On minimisation of word length of multidimensional filter realisations. L.M. Roytman, E. Plotkin and M.N.S. Swamy G p35
Short-time spectrum analyser based on delta-sigma modulation. E.C. Georgoudis and D. Lagoyannis G p295
Use of multiplexers in direct synthesis of ASM-based designs. D.H. Green and M.A. Chughtai E p194

DIGITAL COMMUNICATION SYSTEMS

Digital pseudo-analogue satellite TV transmission system. M. Tomlinson, C. Ward and M. Rendle F p384

Further analysis of bandlimited 16-ary QAM signalling in satellite channels. A.H. Aghvami F p232
Performance evaluation of a 512-QAM system in distorted channels. P. Mathiopoulos and K. Feher F p199 F e300
Performance of 64-QAM, 225-QPRS and 256-QAM in a cochannel interference environment. K.-T. Wu and K. Feher F p576
Power spectral density of digital continuous phase modulation with correlated data symbols. Part 1: Autocorrelation function method. P.K.M. Ho and P.J. McLane F p95 F e214
Power spectral density of digital continuous phase modulation with correlated data symbols. Part 2: Rowe-Prabhu method. P.K.M. Ho and P.J. McLane F p106 F e214
Significance of phase distortion in digital transmission systems. F. Takawira and D.G.W. Ingram F p115
Theoretical performance of an adaptive frequency-hopping modem at HF. P. Doany and G.F. Gott F p470

DIGITAL COMPUTERS AND COMPUTATION

Design methodology for stoppable clock systems. W. Lim E p65
Elimination algorithm: a method for fault diagnosis in combinational circuits based on an effect-cause analysis. J.M. Solana, J.A. Michell and S. Bracho E p31
Flexible fault tolerance for distributed computer systems. O.G. Loques and J. Kramer E p319
Novel data packing algorithm for improved string matching. M.R. Titchener E p185
Numerically reliable software for control: the SLICE library. T.W.C. Williams D p73
Processor failure recovery for a resource sharing algorithm. I.A. Newman, R.P. Stallard and M.C. Woodward E p79
Specification and verification of digital systems using higher-order predicate logic. F.K. Hanna and N. Daeche E p242

DIGITAL CONTROL

Adaptive decoupling of a class of multivariable dynamic systems using output feedback. M.O. Tade, M.M. Bayoumi and D.W. Bacon D p265
Pedagogic computers. A.G. Bromley and T. Nicholson E p212

DIGITAL INSTRUMENTATION

Semicoherent Doppler processing technique. F.R. Castella and R.E. Thurber F p87

DIODES

Approximate method for hand computation of nonlinear distortion performance of varactor tuning circuits. M.T. Abuelma'atti G p265
Arbitrary space charge to bulk boundary model of Auger recombination for semiconductor power diodes. I.A. Henderson and J. McGhee I p169
Avalanche diode harmonic optoelectronic mixer. A.J. Seeds and B. Lenoir J p353
Electronic tuning of high-Q VHF cavity resonators. D.P. Howson and M.S. Mahmoud H p159
Elimination of surface current induced failure in millimetre-wave Baritt diodes. J. Freyer, U. Guettich and M. Claassen I p25
High-injection open-circuit voltage decay in *pn*-junction diodes with lightly doped bases. D.H.J. Totterdell, J.W. Leake and S.C. Jain I p181
Measurements of dg/dN and dn/dN and their dependence on photon energy in $\lambda = 1.5\ \mu m$ InGaAsP laser diodes. L.D. Westbrook J p135
Novel dynamic random access memory cell using three diodes. Y.C. Jeung I p61
Voltage-controlled negative resistance in p^+-i-n^+ planar diodes with injection gate. S. Supadech, S. Okazaki, Y. Akiba, T. Kurosu and M. Iida I p1

DISCHARGES, ELECTRIC

Discharge detection techniques for stator windings. A. Wilson, R.J. Jackson and N. Wang B d112
Discharge simulation. A.J. Davies A p217
Electrical test results of UHV airgaps and insulator configurations. C.L. Nellis, S.H. Sarkinen and D.A. Bradley A p493
Electrostatic discharges from the human body. W.P. O'Neill and B.R. Varlow A p606
Evaluation of space-charge behaviour in long airgap using Pockels' cells. T. Kawamura, T. Matsumoto, M. Ishii and T. Hisada A p573
Multiple electric discharges. J.E. Harry and R. Knight A p50
Photo-induced discharge effects of ZnO semiconductor powder-resin binder layers. A.Y.C. Chan and C. Juhasz I p203
Similarities between electron emission and consequent breakdown processes in high-pressure gases and in vacuum. A.E. Guile, R.V. Latham and A.E.D. Heylen A p280
Statistical design of large UHV electrodes in air. W. Mosch, M. Dietrich, E. Lemke and W. Hauschild A p547
Study of airgap breakdown characteristics under ambient conditions of reduced air density. A.J. Eriksson, B.C. le Roux, H.J. Geldenhuys and D.V. Meal A p485
Switching-impulse strength of the external insulation of three-phase power transformers. H. Studinger and K.-H. Weck A p534

DISCHARGES, GAS

Corona, breakdown and humidity in the rod-plane gap. N.L. Allen A p562
Double impulse tests of long airgaps Part 1. Engineering problems and physical processes: the basis of recent tests. Les Renardières Group A p395
Double-impulse tests of long airgaps Part 2. Leader decay and reactivation. Les Renardières Group A p410
Double-impulse tests of long airgaps Part 3. Voltage front perturbation effects. Les Renardières Group A p438
Double-impulse tests of long airgaps Part 4. Effects of pre-existing space charge on positive discharge development. Les Renardières Group A p469
Similarities between electron emission and consequent breakdown processes in high-pressure gases and in vacuum. A.E. Guile, R.V. Latham and A.E.D. Heylen A p280

DISTRIBUTION NETWORKS

Application of wooden poles for distribution lines. W.C. Sayer C p425
Economics and reliability of supply of developing power systems. A.O. Ekwue C p373
French distribution systems: basic features and practices. R. Tellier and G. Gallet C p377
Offshore electrical systems. J.R. Bromhead C p457
Overhead distribution lines — some reflections on design. G. Orawski, J. Bradbury and M.J. Vanner C p409
Planning of distribution systems in developing countries. S.G. Menon and B.B.V.R. Rao C p384
Review of distribution system planning models: a model for optimal multistage planning. T. Gönen and I.J. Ramírez-Rosado C p397

DOPING

Quasilinear formulation with a simple remeshing scheme for the finite element based simulation of dopant diffusion in silicon. G.A.J. Amaratunga and R. Ismail I p221

EARTHING

Earthing system modelling by element aggregation. J. Nahman and D. Salamon C p54
Proximity effect between an earthing grid and external earthing electrodes in an earthing system of high-voltage installations. Lj.M. Popovic C p346

EDDY CURRENTS

Force on a parallel circular loop moving above a conducting slab and the eddy-current distribution. C.S. Antonopoulos and E.E. Kriezis A p601
Nondestructive metal sheet testing using the phase angle of the electromagnetic fields. G.A. Girgis and A. Bastawros A p137
Perturbation technique for fields and forces due to current filaments moving above a conducting plate of finite thickness. V. Subba Rao A p129
T-Ω technique applied to three-dimensional eddy current problems using the boundary integral equation. K.R. Davey and W.J. Barnes B p359

EDUCATION AND TRAINING

Electronic component quality. P.G. Hamilton-Price, R.F. Read, D.J. Goodsell, J. Mulder, D.S. Campbell and I.H. Cohen A p369
Engineering and industry — the hidden hunger. Sir A. Smith A p630
Ivory tower power. P.J. Lawrenson B p1
Pedagogic computers. A.G. Bromley and T. Nicholson E p212

ELECTRICAL MACHINES

Power electronics, control of the electromechanical energy conversion process and some applications. J.D. van Wyk, H.-Ch. Skudelny and A. Müller-Hellmann B p369

ELECTROMAGNETIC THEORY

A new UK national standard of electrical noise at 77 K in WG15. M.W. Sinclair, A.M. Wallace and B. Thornley A p587
Analysis of two-dimensional circular-cylinder-array scatterers. Desen Fan H p322
Characterisation of plasma in a rail gun. P.K. Ray A p38
Circular cylindrical cavity loaded with a dielectric sleeve for Gunn-effect oscillator stabilisation: application. P.S. Kooi, M.S. Leong and S.P. Yeo H p259
Complex-source-point theory of the two dimensional Hermite-Gaussian beams. Kwai-Man Luk J p245
Computation and validation against measurements of stator end-region fields in synchronous generators. A.G. Jack and B.C. Mecrow C p26
Computation of the electric field at a solid/gas interface in the presence of surface and volume charges. S.I. Bektas, O. Farish and M. Hizal A p577
Differential forms and electromagnetism in 3-dimensional Euclidean space R^3. D. Baldomir A p139
E-field solution of TM-scattering from multiple perfectly conducting and lossy dielectric cylinders of arbitrary cross-section. E. Arvas, S.M. Rao and T.K. Sarkar H p115
EM-wave guidance by a highly conducting surface in uniform motion. D.P. Chrissoulidis and E.E. Kriezis H p143
Effect of boundaries on the space charge potential in coupled cavity travelling wave tubes. V. Srivastava and R.G. Carter I p185
Effective 3-dimensional electric field calculation by surface charge simulation method. S. Sato and W.S. Zaengl A p77
Efficient calculation of force in electromagnetic devices. J. Penman and M.D. Grieve B p212
Electromagnetic radiation: megahertz to gigahertz — A tribute to Heinrich Rudolf Hertz and John Turton Randall. M.J. Lazarus A p109
Electrostatic discharges from the human body. W.P. O'Neill and B.R. Varlow A p606
Exact image method for field calculation in horizontally layered medium above a conducting ground plane. E. Alanen, I.V. Lindell and A.T. Hujanen H p297
Force on a parallel circular loop moving above a conducting slab and the eddy-current distribution. C.S. Antonopoulos and E.E. Kriezis A p601
Microwave backscattering from a layer of randomly oriented discs with application to scattering from vegetation. Ş.S. Şeker H p497
Mutual admittance between slots on a cylinder using the extended Poynting vector method. E.V. Sohtell H p238
Nondestructive metal sheet testing using the phase angle of the electromagnetic fields. G.A. Girgis and A. Bastawros A p137
Numerical solution of scattering from coated bodies of revolution using different integral equation formulations. A.A. Kishk and L. Shafai H p227
On the electrostatics of spherical protrusions. I.W. McAllister A p84
On the solution of open boundary field problems using the finite-element method. J. Penman, M.D. Grieve and A.F. Wilson A p596
Perturbation technique for fields and forces due to current filaments moving above a conducting plate of finite thickness. V. Subba Rao A p129
Phase computer at 2.5 GHz. M. Baribaud, J.C. Caerou and M. Kamarei H p183
Propagation in a doubly periodic dielectric guide. S.L. Arambepola and J.R. Cozens J p332
Radar cross-section of thin dielectric bodies. Ş.S. Şeker H p305
Scattering of an arbitrary wave by a thin strip grating reflector. M. Ando, A. Kondo and K. Kagoshima H p203
Short-circuit electromagnetic forces in three-phase gas insulated systems with aluminium enclosure. A. Safigianni and D. Tsanakas B p331 B e364
Stability characteristics of the Xi-core. C.B. Rajanathan, D.A. Lowther and E.M. Freeman A p89

The Brooks inductor: a study of optimal solenoid cross-sections. P.N. Murgatroyd B p309
The graphical methods of Sumpner, Drysdale and Marchant: solving the Kelvin equation. C.F. Amor A p387
Transient-field representation in terms of steady-improper solutions. G.I. Veselov, A.I. Kirpa and N.I. Platonov H p21

ELECTRON DEVICES

Effect of boundaries on the space charge potential in coupled cavity travelling wave tubes. V. Srivastava and R.G. Carter I p185
Hot, tepid and temperate electrons in bulk GaAs. C. Moglestue I p35
Large-signal field analysis of an O-type travelling wave amplifier. Part 2: Numerical results. N. Kalyanasundaram and R. Chinnadurai I p163
Method for calculating the properties of coupled-cavity slow-wave structures from their dimensions. R.G. Carter and Liu Shunkang H p330
Phase computer at 2.5 GHz. M. Baribaud, J.C. Caerou and M. Kamarei H p183

ELECTRONIC CIRCUITS

Advanced automotive multiplexed wiring system. D.J. Parish and J. Lucas E p312
Correlation algorithms, circuits and measurement applications. J.R. Jordan G p58 G d255
Multiple fault location in AC circuits. J. Rutkowski and A. Macura G p279

ELECTRONIC WARFARE

Bistatic and multistatic radar (Editorial). C. Pell and E. Hanle F p585

ENERGY CONVERSION AND STORAGE

An energy strategy for the UK. A. Goodlad, R. Eden, G. Leach, A. Henney and A.E. Vicars-Miles A p311
Factors affecting the design and operation of redox batteries. K.E. Mosley A p375
Power electronics, control of the electromechanical energy conversion process and some applications. J.D. van Wyk, H.-Ch. Skudelny and A. Müller-Hellmann B p369

ENGINEERING ADMINISTRATION AND MANAGEMENT

A renting system for radio spectrum?. D. Rudd A p58
A systems engineering approach to software development. A. Chandler A p355
An energy strategy for the UK. A. Goodlad, R. Eden, G. Leach, A. Henney and A.E. Vicars-Miles A p311
Design of control systems from a systems engineering point of view. M.J. Whitmarsh-Everiss A p341
Discussion on IEE Colloquium on systems engineering: its nature and scope. D.L. Johnson A p358
Economics and integration of hydro-electric plant in developing countries. T.E. Norris and M.D. Dwek C p121
Editorial: Systems engineering: its nature and scope. D.L. Johnston. A p329
Engineering for the market. D.H.O. Allen A p16
Evolution towards automation. R.T. Beaty A p332
From new technologies to profitable products. S.L.H. Clarke, D.E. Hooper, J. Clement-Jones and G.N. Taylor A p71
Identifying a product strategy. A.J. Wheeldon A p623
Maintenance of hydro-electric plant. B.W. McMillan C p142
Managing system creation. D.K. Hitchins A p343
Monitoring the technological environment. J.J. Quinn A p361
OFTEL: a new approach to regulation. B. Carsberg A p152
Quality circles at work in an electrical engineering/electronic environment. B.G. Dale A p65
Strategic decision making in competitive marketing channels using a differential games framework. V. Ambrosiadou and M.G. Singh A p301
Systems engineering approach to the major capital projects in BP. N.W. Francis A p338
Systems engineering: a proposed definition. P.K. M'Pherson A p330
The 1985 Lord Nelson of Stafford Lecture Electricity in the UK. Lord Marshall of Goring A p119
The architecture of maritime systems. K.J. Rawson A p333
The competitive position of the European telecommunications industry. R. Caldecote A p365
The electric power industry and exemplary techniques. M.C. Duffy A p159

EPITAXY

GaAs $n^+ i \delta p^+ i n^+$ barrier transistor with ultra-thin p^+AlGaAs base prepared by molecular beam epitaxy. W.C. Liu, Y.H. Wang, C.Y. Chang and S.A. Liao I p47

ERRORS AND ERROR ANALYSIS

Error correction in a reversed communications scenario. B. Arazi F p562
Go-back-*N* ARQ scheme with buffer at the receiver. G. Benelli F p271

FAULT DETECTION

Computer generation of topological equations and pseudocircuits for the self testing analogue fault diagnosis algorithm. C.-C. Wu and Y.-Y. Wu G p273
Condition monitoring of electrical drives. J. Penman, M.N. Dey, A.J. Tait and W.E. Bryan B p142

FAULT LOCATION

Fundamental aspects of fault location algorithms used in distance protection. V. Cook C p359
A new monitor for pollution on power line insulators. Part 1: Design, construction and preliminary tests. S.E.-D. Habib and M. Khalifa C p105
Bus and instruction fault diagnosis. J.J. Narraway and R. Venkatesan E p333
Electrical machine core imperfection detection. C. Rickson B p190
Faults in parallel cables. C. Showghi C p270
Multiple fault location in AC circuits. J. Rutkowski and A. Macura G p279
Spectral testing of circuit realisations based on linearisations. E. Eris and J.C. Muzio E p73

FEEDBACK

A two-stage output feedback design. M.S. Mahmoud, Y. Chen and M.G. Singh D p279
Algorithmic determination of linear-feedback in a shift register for pseudorandom binary sequence generation. N.P. Cagigal and S. Bracho G p191
Approach to the analysis of nonlinear feedback oscillators under large-signal injection. E.F. Calandra and A.M. Sommariva G p233 G e284
Chaos in Chua's circuit. F. Ayrom and G.-Q. Zhong D p307
Improved computer-aided design of amplifiers using feedback concepts. D.J.H. Maclean H p428
Placement expanding autolayout router. H.K.E. Liesenberg and D.J. Kinniment I p55

FERRITES AND FERROMAGNETICS

Dielectric and permeability effects in HE_{111} open demagnetised ferrite resonators. J. Helszajn and J. Sharp H p271

FIBRES, OPTICAL

US Navy beginnings in fibre optics. D.J. Albares J p211

FIELD-EFFECT TRANSISTORS

Interfacial problems in preparing a-Si : H FETs. W.Z. Manookian and J.I.B. Wilson I p153
MOTA: a MOSFET timing simulator. S.-J. Jou, C.-W. Jen, W.-Z. Shen and C.-L. Lee I p193
Negative differential output conductance of self heated power MOSFETs. P.S. Barlow, R.G. Davis and M.J. Lazarus I p177
Stability of Schottky barriers at high temperatures for use in GaAs MESFET technology. D.A. Allan I p18

FILTERS AND FILTERING

Additional properties of one-dimensional limit cycles. D.C. McLernon and R.A. King G p140
Analysis and design of optical lowpass multilayer filters via noncommensurate to pseudocommensurate system transformation. T.C. Chen J p359
Application of an extended Kalman filter for state estimation of a yeast fermentation. K.-H. Bellgardt, W. Kuhlmann, H.-D. Meyer, K. Schügerl and M. Thoma D p226
Assessment of Kalman-filter channel estimators for an HF radio link. A.P. Clark and R. Harun F p513
Closed form approach to minimax design of 1-dimensional recursive digital filters. C. Charalambous G p121
Design of low intersymbol interference partial response data transmission filters. A. Adama and L.F. Lind G p195
Designing active filters with linear transformations using off-the-shelf building blocks. J.A. Papadakis G p216
Digital filter functions with short coefficients. J.J. Narraway and R. Venkatesan G p30
Early history of the high-fidelity finite-impulse-response filter. R.H. Wilkinson G p243
Exact discrete time synthesis. H.M. Yassine G p209
General analogue-to-digital transformation. H.M. Yassine G p89
Generation of representative members of an *RrSst* weighted median filter class. D.R.K. Brownrigg F p445
Intersymbol interference and timing jitter performance of realisable data transmission filters. A. Adama and L.F. Lind F p21
Kharitonov's theorem and stability test of multidimensional digital filters. N.K. Bose and E. Zeheb G p187
Method to design FIR Hilbert transformers for delta modulated signals. V. Anastassopoulos and T. Deliyannis G p113
Multimemory block structure for implementing a digital adaptive filter using distributed arithmetic. C.-H. Wei and J.-J. Lou G p19
Multiple critical pole maximally flat *RC* active filter with sharp cutoff. P. Thajchayapong, C. Kimpan and Y. Rungsunseri G p285
Multiple-loop-feedback switched-capacitor filters using approximating biquads. S. Fotopoulos and T. Deliyannis G p84
Multiplier-free filters for ground clutter suppression. R. Klemm F p12
New results on the statistical properties of pseudonoise sequences. A.A.A. Al-Mukhtar and L.F. Turner G p99
On minimisation of word length of multidimensional filter realisations. L.M. Roytman, E. Plotkin and M.N.S. Swamy G p35
On the splitting of a complex-coefficient polynomial. M. de P. Barros and L.F. Lind G p95
Optimal design of discrete coefficient DFTs for spectral analysis: extension to multiplierless FFTs. W.A. Perera and P.J.W. Rayner G p8
Optimal design of discrete coefficient DFTs for spectral analysis. W.A. Perera and P.J.W. Rayner G p1
Self-tuning control of offset using a moving average filter. C.S. Berger D p184
State-space switched capacitor filter design based on single-operational-amplifier biquads. V.I. Georgiev and K.P. Stantchev G p251
Transmit and receive filters for QPSK signals to optimise the performance on linear and hard-limited channels. N.G. Kingsbury F p345

GENERATORS

Comparison of generating and transmission systems for an offshore array of vertical-axis wind turbines. E. Vaahedi and R. Barnes C p237
Condition monitoring of electrical drives. J. Penman, M.N. Dey, A.J. Tait and W.E. Bryan B p142
Developments in hydro-electric generator components. W. Kellenberger C p137
Disc geometry single-phase alternator with slotless stator and AC-side excitation. P.D. Evans and J.F. Eastham B p270
Discharge detection techniques for stator windings. A. Wilson, R.J. Jackson and N. Wang B d112
Electrical machine core imperfection detection. C. Rickson B p190
Hydro-electric machines. E.N. Foster and F.J. Parker C p126
Hydro-electric power in the UK: past performance and potential for future development. F.G. Johnson C p110
Maintenance of hydro-electric plant. B.W. McMillan C p142
Monitoring generators and large motors. P.J. Tavner, B.G. Gaydon and D.M. Ward B p169
Multistacked imbricated rotors with permanent magnet excitation: design for new magnetic materials. T.S. Low and K.J. Binns B p205

Performance monitoring of diesel electricity generation. H.W. Whittington, J.R. Jordan, N. Paterson and P.M. Johnson B p149
Subsynchronous resonance of a power station with two identical generation units. G.D. Jennings, R.G. Harley and D.C. Levy C p33
The inclusion of load correlation in the frequency and duration approach for generating capacity reliability evaluation. C.L. Wee and R. Billinton C p6
Three-dimensional quasi-static magnetic field in superconducting-rotor synchronous generators with a magnetic steel rotor screen. L. Leurs and R.L. Stoll C p69
Trends and future scope in the monitoring of large steam turbine generators. P.A.L. Ham B p164
Wind-driven self-excited pole-changing induction generators. N. Ammasaigounden, M. Subbiah and M.R. Krishnamurthy B p315

GRAPH THEORY AND TOPOLOGY

Direct analysis of stray-insensitive switched-capacitor networks using signal flow graphs. G.S. Moschytz and J.J. Mulawka G p145
Graph theory for image analysis: an approach based on the shortest spanning tree. O.J. Morris, M. de J. Lee and A.G. Constantinides F p146

HISTORY

'Silicon Glen' — myth or reality?. J.H. Collins F p2
Early history of the high-fidelity finite-impulse-response filter. R.H. Wilkinson G p243
Editorial: Historical radar. E.H. Putley F p210
Electromagnetic radiation: megahertz to gigahertz — A tribute to Heinrich Rudolf Hertz and John Turton Randall. M.J. Lazarus A p109
Fifty years of bistatic and multistatic radar. J.I. Glaser F p596
Industrial electrical measuring instrument makers, 1890–1960: reminiscent review. W. Bamford A p125
Optical fibres: the Southampton scene. W.A. Gambling J p205
Seeing by electricity. R.W. Burns A p27
The 1985 Lord Nelson of Stafford Lecture Electricity in the UK. Lord Marshall of Goring A p119
The electric power industry and exemplary techniques. M.C. Duffy A p159
The graphical methods of Sumpner, Drysdale and Marchant: solving the Kelvin equation. C.F. Amor A p387
The history of STC. P. Young A p319

HOLOGRAPHY

Photorefractive materials and their applications in optical image processing. P.D. Foote, T.J. Hall, N.B. Aldridge and A.G. Levenston J p83

IMAGE PROCESSING

Application of multistatic radar principles to short-range imaging. J. Detlefsen F p658
Application of the principle of dyadic symmetry to the generation of orthogonal transforms. W.K. Cham and R.J. Clarke F p264
Concepts and techniques for real-time optical synthetic aperture radar data processing. C.D. Daniel J p7
Discrimination of radar clutter by texture analysis. M. Ogata, M. Sekine and T. Musha F p257
Dynamic frequency plane correlator. I.R. Cooper, M.G. Nicholson and C.R. Petts J p70
Generation of representative members of an *RrSst* weighted median filter class. D.R.K. Brownrigg F p445
Graph theory for image analysis: an approach based on the shortest spanning tree. O.J. Morris, M. de J. Lee and A.G. Constantinides F p146
Image sequence coding by three-dimensional block vector quantisation. M. Goldberg and H.-F. Sun F p482
Low-bit-rate encoder for picture signals using a centre-clipping quantiser. P. Krishnasami and M.N. Faruqui F p68
Low-data-rate visual communication using cartoons: a comparison of data compression techniques. J.A. Robinson F p236
Photorefractive materials and their applications in optical image processing. P.D. Foote, T.J. Hall, N.B. Aldridge and A.G. Levenston J p83
SCAPE: a single-chip array processing element for signal and image processing. R.M. Lea E p145 I p105
Transmission of images using an adaptive ternary delta modulator. J.F. Arnold and M.C. Cavenor F p543

INDUCTION MOTORS

Analysis of air-cored tubular induction motors. S. Williamson and P.J. Leonard B p285
Calculation of the resistance of induction motor end rings. S. Williamson and M.C. Begg B p54
Computation of optimal functions for transients of a photovoltaic array inverter induction motor generator. M. Barlaud, B. de Fornel, M. Gauvrit and J.P. Requier B p16
Decoupled boundary layer model of induction machines. O.T. Tan and G.G. Richards B p255
Stability characteristics of the Xi-core. C.B. Rajanathan, D.A. Lowther and E.M. Freeman A p89
Vibration and current monitoring for detecting airgap eccentricity in large induction motors. J.R. Cameron, W.T. Thomson and A.B. Dow B p155

INDUSTRIAL APPLICATIONS OF POWER

A capacitor bank charger using a high frequency resonant circuit. S.A. Mirbod and W.G. Dunford B e30
Novel technique for the design of induction billet heaters. A.K.M. Al-Shaikhli and L. Hobson B p323
Offshore electrical systems. J.R. Bromhead C p457
The electric power industry and exemplary techniques. M.C. Duffy A p159

INFORMATION AND COMMUNICATION THEORY

Bounded distance coset decoding of convolutional codes. J.M. Jensen and I.S. Reed F p488
Comparison of strategies for serial acquisition of frequency-hopped spread-spectrum signals. C.A. Putman, S.S. Rappaport and D.L. Schilling F p129
Performance comparison of detection methods derived from maximum-likelihood sequence estimation. A.D. Fagan and F.D. O'Keane F p535
Recursive estimation with uncertain observations in a multisensor environment. R.K. Varshney and P.K. Varshney F p527
VLSI and WSI associative string processors for structured data processing. R.M. Lea E p153 I p113

INSTRUMENTATION AND MEASURING SCIENCE

A new national electrical noise standard in X-band. M.W. Sinclair and A.M. Wallace A p272
A note on frequency-response measurement. J.L. Douce D p189
Applications of built-in-test equipment within large systems. W.R. Moore and R.I. Damper G p221
Design and operation perspective of a British UHV laboratory. H.M. Ryan and J. Whiskard A p501
Measuring properties of IREQ's 5.4 MV voltage divider. R. Malewski A p523
Modelling gamma-source backscatter density gauges. I.A. Henderson and J. McGhee A p611
Modulational instability in a nonlinear transmission line. K. Fukushima A p261
RF sampling gates: a brief review. N.P. Akers and E. Vilar A p45
Simple automatic current/voltage characteristics plotter for solar cells and arrays. G. Bhattacharya and H. Saha G p289
The graphical methods of Sumpner, Drysdale and Marchant: solving the Kelvin equation. C.F. Amor A p387

INSULATORS AND INSULATION

A new monitor for pollution on power line insulators. Part 1: Design, construction and preliminary tests. S.E.-D. Habib and M. Khalifa C p105
Breakdown characteristics of insulator strings stressed by short tail waves. C. Gary, R. Garabedian, Z. Zhang, D. Cristescu and R. Enache A p552
Computation of the electric field at a solid/gas interface in the presence of surface and volume charges. S.I. Bektas, O. Farish and M. Hizal A p577
Electrical test results of UHV airgaps and insulator configurations. C.L. Nellis, S.H. Sarkinen and D.A. Bradley A p493
Generalised characteristics for the electric strength of phase-to-phase insulation in EHV overhead transmission lines and substations. G.N. Aleksandrov and Yu.A. Gerasimov A p543
Short-circuit electromagnetic forces in three-phase gas insulated systems with aluminium enclosure. A. Safigianni and D. Tsanakas B p331 B e364

INTEGRATED CIRCUITS

'Silicon Glen' — myth or reality?. J.H. Collins F p2
Performance comparison of integrated continuous-time integrators containing matched MOS transistors. Z. Czarnul G p203
Placement expanding autolayout router. H.K.E. Liesenberg and D.J. Kinniment I p55
Taper etching of the thermal oxide layer. Y.I. Choi, C.K. Kim and Y.S. Kwon I p13
VLSI implementation of a 5-trit full adder. H.T. Mouftah and A.I. Garba G e38

INTEGRATED OPTICS

Geometrical theories of wave propagation: a contemporary review. J.M. Arnold J p165

INTERFERENCE

Combination of cancelling intersymbol interference and decoding of error-correcting code. R. Kohno, S. Pasupathy, H. Imai and M. Hatori F p224
Factors affecting use and design of spread-spectrum modems for the HF band. A.N. Ince and R.E. Schemel F p187
High-efficiency on-board battery charger with transformer isolation, sinusoidal input current and maximum power factor. J.Ch. Bendien, G. Fregien and J.D. van Wyk B p197
Intersymbol interference and timing jitter performance of realisable data transmission filters. A. Adams and L.F. Lind F p21
Novel algorithm for generating near optimal PWM waveforms for AC traction drives. J.A. Taufiq, B. Mellitt and C.J. Goodman B p85

INVERTERS

Analysis of the periodic transient state of a static Kramer drive. J.E. Brown, W. Drury, B.L. Jones and P. Vas B p21
Computation of optimal functions for transients of a photovoltaic array inverter induction motor generator. M. Barlaud, B. de Fornel, M. Gauvrit and J.P. Requier B p16
DC link current in PWM inverters. P.D. Evans and R.J. Hill-Cottingham B p217
Electrical instability in a voltage source inverter-fed induction motor drive at constant speed. M.M. Ahmed, J.A. Taufiq, C.J. Goodman and M. Lockwood B p299
New PWM switching strategy for microprocessor controlled inverter drives. S.R. Bowes and A. Midoun B p237
Novel algorithm for generating near optimal PWM waveforms for AC traction drives. J.A. Taufiq, B. Mellitt and C.J. Goodman B p85
Novel type of high-frequency link inverter for photovoltaic residential applications. P. Savary, M. Nakaoka and T. Maruhashi B p279
Optimised microelectronic power control of an AC drive for an electric vehicle. W.K. Loh and A.C. Renfrew B p291
Railway signalling compatability of inverter fed induction motor drives for rapid transit. J.A. Taufiq, C.J. Goodman and B. Mellitt B p71

IONISATION

Discharge simulation. A.J. Davies A p217
Multiple electric discharges. J.E. Harry and R. Knight A p50

LASERS

Analysis of absorptive bistable characteristics of multisegment lasers. M.C. Perkins, R.F. Ormondroyd and T.E. Rozzi J p283
Control of astigmatism in proton isolated stripe AlGaAs double heterostructure lasers. D. Kerps and R. Engelmann J p267
Dependence of chirp in injection lasers on temporal optical pulse shape. J.E. Carroll, I.H. White and D.F.G. Gallagher J p279
Dynamic single-mode operation of DFB lasers with phase shifted gratings and reflecting mirrors. J. Buus J p163
Lateral current spreading in DH-lasers above threshold. J.P. Van de Capelle, P. Vankwikelberge and R. Baets J p143

Measurements of dg/dN and dn/dN and their dependence on photon energy in $\lambda = 1.5$ μm InGaAsP laser diodes. L.D. Westbrook **J** p135
Reduction of transient laser chirp in 1.5 μm DFB lasers by shaping the modulation pulse. L. Bickers and L.D. Westbrook **J** p155
Threshold current analysis of InGaAsP–InP ridge-waveguide lasers. M.-C. Amann and B. Stegmüller **J** p341

LIGHTING

Interior Lighting. D. Fischer **B** p115

LIGHTNING AND LIGHTNING PROTECTION

Breakdown characteristics of insulator strings stressed by short tail waves. C. Gary, R. Garabedian, Z. Zhang, D. Cristescu and R. Enache **A** p552

LINEAR NETWORKS

Linear system reduction by the modified factor division method. T.N. Lucas **D** p293
On decentralised eigenvalue assignment for large-scale systems with dynamic interconnections. A. El-Kashlan and M. El-Geneidy **D** p121
Reply to comments on a simplified analytical stability test for systems with delay. D. Hertz, E.I. Jury and E. Zeheb **D** d142
Simplified analytical stability test for systems with delay. D. Hertz, E.I. Jury and E. Zeheb **D** d142

LOAD AND VOLTAGE REGULATION

Double impulse tests of long airgaps Part 1. Engineering problems and physical processes: the basis of recent tests. Les Renardières Group **A** p395
Double-impulse tests of long airgaps Part 2. Leader decay and reactivation. Les Renardières Group **A** p410
Double-impulse tests of long airgaps Part 3. Voltage front perturbation effects. Les Renardières Group **A** p438
Double-impulse tests of long airgaps Part 4. Effects of pre-existing space charge on positive discharge development. Les Renardières Group **A** p469
Electrical test results of UHV airgaps and insulator configurations. C.L. Nellis, S.H. Sarkinen and D.A. Bradley **A** p493
Modelling of domestic hot-water heater load from online operating records and some applications. M.U. Kobe and A.C. Tsoi **C** p336
UHV air insulation:physical and engineering research (Editorial). R.T. Waters p. 393. **A** p393

LOGIC

Aid to hierarchial and structured logic design using temporal logic and Prolog. M. Fujita, S. Kono, H. Tanaka and T. Moto-Oka **E** p283
Formal hardware verification methodology and its application to a network interface chip. M.J.C. Gordon and J. Herbert **E** p255
High-speed encoder for the 16B9Q line code. A.H. Prystajecky, P.A. Goud and C.G. Englefield **G** p115
Logic programs and an experimental architecture for their execution. J.V. Oldfield **E** p163 **I** p123
Microcomputer system specification using interval logic and a modified labelled-net model. H.F. Li, Y.S. Cheung and P.P.K. Chiu **E** p223
Specification and verification of digital systems using higher-order predicate logic. F.K. Hanna and N. Daeche **E** p242
VLSI implementation of a 5-trit full adder. H.T. Mouftah and A.I. Garba **G** g38

LONG-TERM PLANNING

Medium-term forecasts of half-hourly system demand: development of an interactive demand estimation coefficient model. S.V. Allera and J.E. McGowan **C** p393
Review of distribution system planning models: a model for optimal multistage planning. T. Gönen and I.J. Ramirez-Rosado **C** p397

MAGNETIC DEVICES AND PROPERTIES

Calculation of effective inductance of gapped core assemblies. P.D. Evans and B.M. Saied **B** p41
Multistacked imbricated rotors with permanent magnet excitation: design for new magnetic materials. T.S. Low and K.J. Binns **B** p205

MAGNETIC FIELDS

Computation of the electric field at a solid/gas interface in the presence of surface and volume charges. S.I. Bektas, O. Farish and M. Hizal **A** p577
Differential forms and electromagnetism in 3-dimensional Euclidean space R^3. D. Baldomir **A** p139
Magnetic permeance of aligned doubly salient structures. J.W. Finch **B** p365
On the solution of open boundary field problems using the finite-element method. J. Penman, M.D. Grieve and A.F. Wilson **A** p596
Three-dimensional quasi-static magnetic field in superconducting-rotor synchronous generators with a magnetic steel rotor screen. L. Leurs and R.L. Stoll **C** p69

MANAGEMENT

A systems engineering approach to software development. A. Chandler **A** p355
Design of control systems from a systems engineering point of view. M.J. Whitmarsh-Everiss **A** p341
Discussion on IEE Colloquium on systems engineering: its nature and scope. D.L. Johnson **A** p358
Editorial: Systems engineering: its nature and scope. D.L. Johnston. **A** p329
Evolution towards automation. R.T. Beaty **A** p332
Managing system creation. D.K. Hitchins **A** p343
Medium-term forecasts of half-hourly system demand: development of an interactive demand estimation coefficient model. S.V. Allera and J.E. McGowan **C** p393
Modelling of domestic hot-water heater load from online operating records and some applications. M.U. Kobe and A.C. Tsoi **C** p336
Monitoring the technological environment. J.J. Quinn **A** p361
Systems engineering approach to the major capital projects in BP. N.W. Francis **A** p338
Systems engineering: a proposed definition. P.K. M'Pherson **A** p330
The architecture of maritime systems. K.J. Rawson **A** p333

MATHEMATICAL TECHNIQUES

A new microcomputer-based online ocular artefact removal (OAR) system. E.C. Ifeachor, B.W. Jervis, E.L. Morris, E.M. Allen and N.R. Hudson **A** p291
Accurate analysis of latching phase shifters. W. Hauth **H** p165
Additional properties of one-dimensional limit cycles. D.C. McLernon and R.A. King **G** p140
Algorithmic determination of linear-feedback in a shift register for pseudorandom binary sequence generation. N.P. Cagigal and S. Bracho **G** p191
Analysis and synthesis of static power convertors. D. Levy and E. McQuade **G** p39
Analysis of air-cored tubular induction motors. S. Williamson and P.J. Leonard **B** p285
Analysis of electromagnetic systems by means of Fourier transform techniques. R. Chicon, E. Martin and A. Navarro **H** p248
Analysis of transient stability of a multimachine power system using a variable gradient Lyapunov function. A.V. Machias **C** p81
Application of the principle of dyadic symmetry to the generation of orthogonal transforms. W.K. Cham and R.J. Clarke **F** p264
Automatic determination of tone period and evaluation of dysphony in pathological voices. S. Feijóo and C. Hernández **A** p99
Calculation of effective inductance of gapped core assemblies. P.D. Evans and B.M. Saied **B** p41
Characterising the power system at a load busbar by measurement. P.M. Hart **C** p87
Closed form approach to minimax design of 1-dimensional recursive digital filters. C. Charalambous **G** p121
Comprehensive calculation of convertor harmonics with system impedances and control representation. R. Yacamini and J.C. de Oliveira **B** p95
Computation and validation against measurements of stator end-region fields in synchronous generators. A.G. Jack and B.C. Mecrow **C** p26
Computer generation of topological equations and pseudocircuits for the self testing analogue fault diagnosis algorithm. C.-C. Wu and Y.-Y. Wu **G** p273
Correlation algorithms, circuits and measurement applications. J.R. Jordan **G** p58 **G** d255
Correlations of wave variables in a passive network. R.E. Bogner and B.R. Davis **G** p165
Design of a reduced-order adaptive observer. N. Minamide, P.N. Nikiforuk and M.M. Gupta **D** p133
Development of coherency-based time-domain equivalent model using structure constraints. R. Nath and S.S. Lamba **C** p165
Differential forms and electromagnetism in 3-dimensional Euclidean space R^3. D. Baldomir **A** p139
Digital filter functions with short coefficients. J.J. Narraway and R. Venkatesan **G** p30
Direct synthesis of the matched symmetric five-port junction from its scattering matrix. S.K. Judah and M.D. Judd **H** p95
Disc geometry single-phase alternator with slotless stator and AC-side excitation. P.D. Evans and J.F. Eastham **B** p270
Discharge simulation. A.J. Davies **A** p217
Dyadic Green's function for microstrip-like transmission lines on a large class of anisotropic substrates. R. Marques and M. Horno **H** p450
Dynamic allocation of degrees of freedom in an adaptive antenna. J.E. Hudson **H** p34
E-field solution of TM-scattering from multiple perfectly conducting and lossy dielectric cylinders of arbitrary cross-section. E. Arvas, S.M. Rao and T.K. Sarkar **H** p115
EM-wave guidance by a highly conducting surface in uniform motion. D.P. Chrissoulidis and E.E. Kriezis **H** p143
Earthing system modelling by element aggregation. J. Nahman and D. Salamon **C** p54
Easy generation of small-N discrete Fourier transform algorithms. R. Stasiński **G** p133
Efficient calculation of force in electromagnetic devices. J. Penman and M.D. Grieve **B** p212
Efficient parallel processing technique for inverting matrices with random sparsity. R. Betancourt **E** p235
Equivalent linear span analysis of binary sequences having an interleaved structure. S. Prasad and L.C. Quynh **F** p288
Exact discrete time synthesis. H.M. Yassine **G** p209
Exact solutions for Debye-like relaxations in multilayered conducting dielectrics. R. Ongaro **A** p275
Finite element analysis of H-plane rectangular waveguide problems. J.P. Webb and S. Parihar **H** p91
Finite-element analysis characterisation of a switched reluctance motor with multitooth per stator pole. J.F. Lindsay, R. Arumugam and R. Krishnan **B** p347
General analogue-to-digital transformation. H.M. Yassine **G** p89
General dielectric-lens shaping using complex co-ordinates. B.S. Westcott and F. Brickell **H** p122
Generalised open resonator theory. Kwai-Man Luk **J** p293
Generation of representative members of an *RrSst* weighted median filter class. D.R.K. Brownrigg **F** p445
Graph theory for image analysis: an approach based on the shortest spanning tree. O.J. Morris, M. de J. Lee and A.G. Constantinides **F** p146
Interdigital microstrip capacitor as a four-port network. X.Y. She and Y.L. Chow **H** p191
Lateral analysis of conventional and field-induced junction solar cells. Z. Meglicki, E.L. Heasell and A.G. Nassibian **J** p149
Linear system reduction by the modified factor division method. T.N. Lucas **D** p293
Multiple-loop-feedback switched-capacitor filters using approximating biquads. S. Fotopoulos and T. Deliyannis **G** p84
New algorithm for transient suppression for images due to incomplete or partial boundary data. G. Eichmann and L.M. Roytman **G** p27
New approach for planning high-voltage transmission networks. S.M. El-Sobki, M.M. El-Metwally and M.A. Farrag **C** p256
New class of M-ary communication systems using complementary sequences. I.M.I. Habbab and L.F. Turner **F** p293
New class of sequence sets with good auto- and crosscorrelation functions. L.C. Quynh and S. Prasad **F** p281
New results on the statistical properties of pseudonoise sequences. A.A.A. Al-Mukhtar and L.F. Turner **G** p99
On the analysis of singular systems using orthogonal functions. G.T. Kekkeris **D** p315

On the solution of open boundary field problems using the finite-element method. J. Penman, M.D. Grieve and A.F. Wilson A p596
On the splitting of a complex-coefficient polynomial. M. de P. Barros and L.F. Lind G p95
On using orthogonal functions for the analysis of singular systems. W. Marszalek D d192 D d315
On using orthogonal functions with singular systems. S.L. Campbell D d192 D d315
Optimal design of discrete coefficient DFTs for spectral analysis: extension to multiplierless FFTs. W.A. Perera and P.J.W. Rayner G p8
Optimal design of discrete coefficient DFTs for spectral analysis. W.A. Perera and P.J.W. Rayner G p1
Performance of a new class of binary communication systems. I.M.I. Habbab and L.F. Turner F p301
Radar cross-section of thin dielectric bodies. Ş.S. Şeker H p305
Rapidly converging expressions of dyadic Green's functions for parallel-plate transmission line. M. Bressan H p503
Self-consistent detailed balance treatment of the solar cell. J.E. Parrott J p314
Separation of matrix eigenvalues and structural decomposition of large-scale systems. L.S. Shieh, H.M. Dib and R.E. Yates D p90
Shifted Legendre approach to the analysis and identification of a linear delayed system with a nonlinear gain. D.-H. Shih and F.-C. Kung D p127
Simple theory for the spectral properties of semiconductor lasers with reduced reflectivity. J. Buus J p121
Simultaneous estimation of state variables and parameters for multivariable linear systems with singular pencil models. Y.C. Chen, J.D. Aplevich and W.J. Wilson D p65
Spectral decomposition and extrapolation of variations in electricity loading. S.P. Moutter, P.S. Bodger and P.T. Gough C p247
Stable reduced-order models for discrete-time systems. M. Farsi, K. Warwick and M. Guilandoust D p137
Statistical bounds on multivariable frequency response: an extension of the generalised Nyquist criterion. D.J. Cloud and B. Kouvaritakis D p97
Strategic decision making in competitive marketing channels using a differential games framework. V. Ambrosiadou and M.G. Singh A p301
Synchronisation process for the variable-length T-codes. M.R. Titchener and J.J. Hunter E p54
T-Ω technique applied to three-dimensional eddy current problems using the boundary integral equation. K.R. Davey and W.J. Barnes B p359
The Brooks inductor: a study of optimal solenoid cross-sections. P.N. Murgatroyd B p309
The calculation of inrush current in three-phase transformers. R. Yacamini and A. Abu-Nasser B p31
The inclusion of load correlation in the frequency and duration approach for generating capacity reliability evaluation. C.L. Wee and R. Billinton C p6
Three-dimensional quasi-static magnetic field in superconducting-rotor synchronous generators with a magnetic steel rotor screen. L. Leurs and R.L. Stoll C p69
Transformation of linearly constrained broadband processors to unconstrained partitioned form. M.H. Er and A. Cantoni H p209
Transient calculation of a transmission line using superposition law. H. Nakanishi and A. Ametani C p263
Transient-field representation in terms of steady-improper solutions. G.I. Veselov, A.I. Kirpa and N.I. Platonov H p21
Use of time functions to describe and explain circuit behaviour. P. Amblard, P. Caspi and N. Halbwachs E p271

MATRIX ALGEBRA

A two-stage output feedback design. M.S. Mahmoud, Y. Chen and M.G. Singh D p279
Analysis and synthesis of static power convertors. D. Levy and E. McQuade G p39
Application of an extended Kalman filter for state estimation of a yeast fermentation. K.-H. Bellgardt, W. Kuhlmann, H.-D. Meyer, K. Schügerl and M. Thoma D p226
Design of a reduced-order adaptive observer. N. Minamide, P.N. Nikiforuk and M.M. Gupta D p133
Identification and control of an extruder using multivariable algorithms. L.W. Bezanson and S.L. Harris D p145
Linear system reduction by the modified factor division method. T.N. Lucas D p293
Regulation and control effort in self-tuning controllers. M.A. Magdy and T.S. Ng D p289
Separation of matrix eigenvalues and structural decomposition of large-scale systems. L.S. Shieh, H.M. Dib and R.E. Yates D p90
Shifted Legendre approach to the analysis and identification of a linear delayed system with a nonlinear gain. D.-H. Shih and F.-C. Kung D p127
Statistical bounds on multivariable frequency response: an extension of the generalised Nyquist criterion. D.J. Cloud and B. Kouvaritakis D p97

MEASUREMENT AND MEASURING

A new UK national standard of electrical noise at 77 K in WG15. M.W. Sinclair, A.M. Wallace and B. Thornley A p587
A new national electrical noise standard in X-band. M.W. Sinclair and A.M. Wallace A p272
Characterising the power system at a load busbar by measurement. P.M. Hart C p87
Correlation algorithms, circuits and measurement applications. J.R. Jordan G p58 G d255
Digital linear transducer using a dynamic RAM. J.G. Lacy and M.P. Kennedy E p97
Evaluation of space-charge behaviour in long airgap using Pockels' cells. T. Kawamura, T. Matsumoto, M. Ishii and T. Hisada A p573
Force on a parallel circular loop moving above a conducting slab and the eddy-current distribution. C.S. Antonopoulos and E.E. Kriezis A p601
Low-frequency electrical characteristics of fresh concrete. H.W. Whittingon and J.G. Wilson A p265
Measuring properties of IREQ's 5.4 MV voltage divider. R. Malewski A p523
Microprocessor based polarity correlation using the skip algorithm. J.R. Jordan, B. Kiani-Shabestari and M. Napthine G p227
Model of the formation of a dry band on an NaCl-polluted insulation. C. Texier and B. Kouadri A p285
Modelling gamma-source backscatter density gauges. I.A. Henderson and J. McGhee A p611
Modulational instability in a nonlinear transmission line. K. Fukushima A p261
Prediction of leakage from single braid screened cables. P.A. Cudd, F.A. Benson and J.E. Sitch A p144
RF sampling gates: a brief review. N.P. Akers and E. Vilar A p45
The graphical methods of Sumpner, Drysdale and Marchant: solving the Kelvin equation. C.F. Amor A p387

METAL-INSULATOR-SEMICONDUCTOR STRUCTURES

Isolated Al-SiN-(*p*)Si-(*n*)Si MISS device. C.Y. Chang, B.C. Fang, Y.D. Wang and F.C. Tzeng I p189

METAL-OXIDE-SEMICONDUCTOR STRUCTURES

Distributed charge (sub)micron MOS transistor model. J.-J. Charlot and S. Toutain J p207
First-order parameter extraction on enhancement silicon MOS transistors. M.F. Hamer I p49
MOTA: a MOSFET timing simulator. S.-J. Jou, C.-W. Jen, W.-Z. Shen and C.-L. Lee I p193
Negative differential output conductance of self heated power MOSFETs. P.S. Barlow, R.G. Davis and M.J. Lazarus I p177
Silicon-on-insulator technology. S.L. Partridge E p106 I p66

MICROPROCESSORS

Microcomputer system specification using interval logic and a modified labelled-net model. H.F. Li, Y.S. Cheung and P.P.K. Chiu E p223
Microprocessor based polarity correlation using the skip algorithm. J.R. Jordan, B. Kiani-Shabestari and M. Napthine G p227

MICROSTRIP AND STRIPLINE

Analysis of microstrip slotline ring 3dB directional couplers. J. Chramiec and A.M. Glass H p187
Automatic technique for the characterisation of a dielectric resonator coupled to a microstrip line. M.C. Sanchez, C.R. Villalba, J.M. Zamarro and E. Martin H p99
Interdigital microstrip capacitor as a four-port network. X.Y. She and Y.L. Chow H p191
Modes on a four-conductor line. B. Climer H p392
Warped-mode multiway combline directional couplers. S. Islam and J.E. Carroll H p81

MICROWAVE ACTIVE COMPONENTS

Automatic technique for the characterisation of a dielectric resonator coupled to a microstrip line. M.C. Sanchez, C.R. Villalba, J.M. Zamarro and E. Martin H p99
Computer-aided design of microwave amplifiers by the random addition of new components. K. Anvari and A.J. Baden Fuller H p395
Dynamic transfer properties of frequency multipliers. A. Jacob, E. Burkert, H. Brauns and K. Schünemann H p175
Influence of an airgap on the measurement of dielectric constant by a parallel-plate dielectric resonator. D. Kajfez, W.P. Wheless and R.T. Ward H p253 H e340
Six-port reflectometer theory for symmetrical five-port junction with directional coupler. A.L. Cullen and S.P. Yeo H p277

MICROWAVE CIRCUITS AND NETWORKS

Computer optimisation of circuits applied to the modelling of microwave IC passive components. A.J. Baden Fuller H p411
Computer-aided design of MMIC structures. W. McKenzie, D.M. Barry, C.M. Snowden and M.J. Howes H p405
Computer-aided design of MMICs based on physical device models. C.M. Snowden H p419
Design formulas for impedance matching using a hermite line. S.O. Ajose H p319
Dynamic transfer properties of frequency multipliers. A. Jacob, E. Burkert, H. Brauns and K. Schünemann H p175
Frequency domain continuation method for the analysis and stability investigation of nonlinear microwave circuits. D. Hente and R.H. Jansen H p351
Functional analysis of nonlinear circuits: a generating power series approach. M. Lamnabhi H p375
Large-signal FET simulation using time domain and harmonic balance methods. T. Brazil, S. El-Rabaie, E. Choo, V. Fusco and C. Stewart H p363
Matching of GaAs power FETs using a large-signal modelling technique. A.J. Holden, B.T. Debney, J.P. King, J.G. Metcalfe and C.H. Oxley H p399
Method for calculating the properties of coupled-cavity slow-wave structures from their dimensions. R.G. Carter and Liu Shunkang H p330
Modes on a four-conductor line. B. Climer H p392
Simple models for high-frequency MESFETs and comparison with experimental results. C.H. Oxley and A.J. Holden H p335
Use of condensed and symmetrical TLM nodes in computer-aided electromagnetic design. P.B. Johns H p368
User-oriented software package for the analysis and optimisation of nonlinear microwave circuits. V. Rizzoli, C. Cecchetti, A. Lipparini and A. Neri H p385
Warped-mode multiway combline directional couplers. S. Islam and J.E. Carroll H p81

MICROWAVE MEASUREMENTS

Phase computer at 2.5 GHz. M. Baribaud, J.C. Caerou and M. Kamarei H p183
Quasi-optical seven-port reflectometer for millimetre waves. A.L. Cullen and J.D. Xu H p455
RF sampling gates: a brief review. N.P. Akers and E. Vilar A p45

MICROWAVE PASSIVE COMPONENTS

Computer optimisation of circuits applied to the modelling of microwave IC passive components. A.J. Baden Fuller H p411

MICROWAVE SYSTEMS

Application of multistatic radar principles to short-range imaging. J. Detlefsen F p658
Bistatic/multistatic radar bibliography. E. Hanle, A. Farina and C. Pell F p664

MILLIMETRE WAVE DEVICES AND COMPONENTS

Quasi-optical seven-port reflectometer for millimetre waves. A.L. Cullen and J.D. Xu **H** p455

MODELLING

A model reference adaptive control system for discrete multivariable bilinear systems with interconnected subsystems. M. de la Sen **D** p165
A two-stage output feedback design. M.S. Mahmoud, Y. Chen and M.G. Singh **D** p279
Accurate bias dependent linear model for bipolar transistors up to 6 GHz. K. Bharath Kumar, R. Krishnapur and T.B. Mondal **I** p214
Analysis of optical writing mode in solid-state imaging devices with inherent MNOS memory. T. Ando, H. Yamasaki and T. Sugishita **I** p6
Application of an extended Kalman filter for state estimation of a yeast fermentation. K.-H. Bellgardt, W. Kuhlmann, H.-D. Meyer, K. Schügerl and M. Thoma **D** p226
Approximate models in multivariable process control: An inverse Nyquist array and robust tuning regulator interpretation. D.H. Owens and A. Chotai **D** p1
Calculation of the resistance of induction motor end rings. S. Williamson and M.C. Begg **B** p54
Comprehensive calculation of convertor harmonics with system impedances and control representation. R. Yacamini and J.C. de Oliveira **B** p95
Control laws for systems with inequality models of uncertainty. A. Świerniak **D** p153
Decoupled boundary layer model of induction machines. O.T. Tan and G.G. Richards **B** p255
Development of coherency-based time-domain equivalent model using structure constraints. R. Nath and S.S. Lamba **C** p165
Developments in phase-variable modelling for thyristor-controlled reactive-power compensators. W.D. Humpage and T.T. Nguyen **C** p277
Directional response of a towed array in shallow sea. C. Karthikeyan **F** p138
Distributed charge (sub)micron MOS transistor model. J.-J. Charlot and S. Toutain **J** p207
Hot, tepid and temperate electrons in bulk GaAs. C. Moglestue **I** p35
Identification of finite-order models of distributed systems. I.F. Taylor **D** p276
Incorporation of weather effects in transmission system models for composite system adequacy evaluation. R. Billinton and L. Cheng **C** p319
Lateral current spreading in DH-lasers above threshold. J.P. Van de Capelle, P. Vankwikelberge and R. Baets **J** p143
Matching of GaAs power FETs using a large-signal modelling technique. A.J. Holden, B.T. Debney, J.P. King, J.G. Metcalfe and C.H. Oxley **H** p399
Mathematical description of the behaviour of *Chaetomium cellulolyticum*: modelling of the growth on glucose and cellulose substrate. W. Scheiding, M. Thoma, V. Hecht, W. Rosen and K. Schügerl **D** p199
Medium-term forecasts of half-hourly system demand: development of an interactive demand estimation coefficient model. S.V. Allera and J.E. McGowan **C** p393
Model reduction of discrete systems using the power decomposition method and the system identification method. C.M. Liaw, C.T. Pan and M. Ouyang **D** p30
Modelling and analysis of the Ćuk convertor using the discrete impulse response method. L. Martínez, A. Poveda and J.M. Miguel **G** p77
Modelling and identification of a stochastic water-quality system using actual data. K.A.F. Moustafa, M.Y. Gaafar and T. Abu-El-Yazid **D** p159
Modelling of domestic hot-water heater load from online operating records and some applications. M.U. Kobe and A.C. Tsoi **C** p336
Modelling of substation grounding grids. A. El-Morshedy, A.G. Zeitoun and M.M. Ghourab **C** p287
Modelling the DC characteristics of VMOS power transistors for computer-aided design. M.T. Abuelma'atti **I** p161
New results on the statistical properties of pseudonoise sequences. A.A.A. Al-Mukhtar and L.F. Turner **G** p99
Optimisation philosophy of acquisition process for tracking radar. Wang Li and Qiao Xiaolin **F** p493
Review of distribution system planning models: a model for optimal multistage planning. T. Gönen and I.J. Ramirez-Rosado **C** p397
Soluble Polydiacetylenes for picosecond nonlinear optical phase conjugation. W.M. Dennis and W. Blau **J** p91
Statistical bounds on multivariable frequency response: an extension of the generalised Nyquist criterion. D.J. Cloud and B. Kouvaritakis **D** p97
Statistical electricity demand modelling from consumer billing data. G.W. Irwin, W. Monteith and W.C. Beattie **C** p328
Stochastic modelling of radar returns. P. Thomas and S. Haykin **F** p476
Theoretical study of the interferometric Bragg-cell spectrum analyser. W.A. Wilby and P.V. Gatenby **J** p47
Tracking function in bistatic and multistatic radar systems. A. Farina **F** p630
Voltage-controlled negative resistance in p^+-i-n^+ planar diodes with injection gate. S. Supadech, S. Okazaki, Y. Akiba, T. Kurosu and M. Iida **I** p1

MODULATION

Applications of a power chopper to the thyristor Scherbius. K. Taniguchi and H. Mori **B** p225
DC link current in PWM inverters. P.D. Evans and R.J. Hill-Cottingham **B** p217
Digital pulse position modulation over optical fibres with avalanche photodiode receivers. J.J.O. Pires and J.R.F. da Rocha **J** p309
Hybrid constant factor incremental delta modulators. V.D. Mytri and A.P. Shivaprasad **F** p522
New PWM switching strategy for microprocessor controlled inverter drives. S.R. Bowes and A. Midoun **B** p237
Novel algorithm for generating near optimal PWM waveforms for AC traction drives. J.A. Taufiq, B. Mellitt and C.J. Goodman **B** p85
Observations of intermodulation effects in an integrated optical spectrum analyser. J. Singh and R.M. De La Rue **J** p105
Optical rise time and frequency chirping predictions for (forward-biased) optical absorption modulators. L.D. Westbrook **J** p273
Performance evaluation of a 512-QAM system in distorted channels. P. Mathiopoulos and K. Feher **F** p199 **F** e300
Performance of 64-QAM, 225-QPRS and 256-QAM in a cochannel interference environment. K.-T. Wu and K. Feher **F** p576
Phase modulated 3-phase pole changing windings. A.R.W. Broadway and K.S. Ismail **B** p61
Power spectral density of digital continuous phase modulation with correlated data symbols. Part 1: Autocorrelation function method. P.K.M. Ho and P.J. McLane **F** p95 **F** e214
Power spectral density of digital continuous phase modulation with correlated data symbols. Part 2: Rowe-Prabhu method. P.K.M. Ho and P.J. McLane **F** p106 **F** e214
Railway signalling compatability of inverter fed induction motor drives for rapid transit. J.A. Taufiq, C.J. Goodman and B. Mellitt **B** p71
Short-time spectrum analyser based on delta-sigma modulation. E.C. Georgoudis and D. Lagoyannis **G** p295
Some useful criteria for the optimisation of phase code spectra. J.A.S. Redwood-Sawyerr and L.F. Lind **F** p16
Transmission of images using an adaptive ternary delta modulator. J.F. Arnold and M.C. Cavenor **F** p543

MONITORING

Condition monitoring of electrical drives. J. Penman, M.N. Dey, A.J. Tait and W.E. Bryan **B** p142
Editorial: Plant condition monitoring. J.R. Smith **B** p141
Electrical machine core imperfection detection. C. Rickson **B** p190
Monitoring generators and large motors. P.J. Tavner, B.G. Gaydon and D.M. Ward **B** p169
Performance monitoring of diesel electricity generation. H.W. Whittington, J.R. Jordan, N. Paterson and P.M. Johnson **B** p149
Rotor winding short detection. J.W. Wood and R.T. Hindmarch **B** p181
Trends and future scope in the monitoring of large steam turbine generators. P.A.L. Ham **B** p164
Vibration and current monitoring for detecting airgap eccentricity in large induction motors. J.R. Cameron, W.T. Thomson and A.B. Dow **B** p155

MOTORS

Analysis of air-cored tubular induction motors. S. Williamson and P.J. Leonard **B** p285
Analytical prediction of torque and inductance characteristics of identically slotted doubly-salient reluctance motors. H.B. Ertan **B** p230
Condition monitoring of electrical drives. J. Penman, M.N. Dey, A.J. Tait and W.E. Bryan **B** p142
DC traction motor with slotless armature. E. Spooner **B** d367
Decoupled boundary layer model of induction machines. O.T. Tan and G.G. Richards **B** p255
Discharge detection techniques for stator windings. A. Wilson, R.J. Jackson and N. Wang **B** d112
Electrical machine core imperfection detection. C. Rickson **B** p190
Investigation into a class of brushless DC motor with quasisquare voltages and currents. H.R. Bolton, Y.D. Liu and N.M. Mallinson **B** p103
Monitoring generators and large motors. P.J. Tavner, B.G. Gaydon and D.M. Ward **B** p169
Multistacked imbricated rotors with permanent magnet excitation: design for new magnetic materials. T.S. Low and K.J. Binns **B** p205
Vibration and current monitoring for detecting airgap eccentricity in large induction motors. J.R. Cameron, W.T. Thomson and A.B. Dow **B** p155

MOTORS, RELUCTANCE

Finite-element analysis characterisation of a switched reluctance motor with multitooth per stator pole. J.F. Lindsay, R. Arumugam and R. Krishnan **B** p347

MULTIVARIABLE CONTROL SYSTEMS

A model reference adaptive control system for discrete multivariable bilinear systems with interconnected subsystems. M. de la Sen **D** p165
Adaptive decoupling of a class of multivariable dynamic systems using output feedback. M.O. Tade, M.M. Bayoumi and D.W. Bacon **D** p265
Approximate models in multivariable process control: An inverse Nyquist array and robust tuning regulator interpretation. D.H. Owens and A. Chotai **D** p1
Identification and control of an extruder using multivariable algorithms. L.W. Bezanson and S.L. Harris **D** p145
Multivariable adaptive control of baker's yeast fermentation. D. Williams and P.A. Montgomery **D** p247
Multivariable adaptive controller for a turbogenerator. S.M.Z. Sharaf, B.W. Hogg, O.H. Abdalla and M.L. El-Sayed **D** p83
On nonsingular value based design of controllers for robust stability. O.D.I. Nwokah **D** p57
Simultaneous estimation of state variables and parameters for multivariable linear systems with singular pencil models. Y.C. Chen, J.D. Aplevich and W.J. Wilson **D** p65
Statistical bounds on multivariable frequency response: an extension of the generalised Nyquist criterion. D.J. Cloud and B. Kouvaritakis **D** p97

NATURAL RESOURCES

Control of hydro-electric plant. E.G. Davidson **C** p145
Developments in hydro-electric generator components. W. Kellenberger **C** p137
Economics and integration of hydro-electric plant in developing countries. T.E. Norris and M.D. Dwek **C** p121
Electrical auxiliary supply systems for hydro-electric power plants. J.A. Wade **C** p148
Hydro-electric machines. E.N. Foster and F.J. Parker **C** p126
Hydro-electric power in the UK: past performance and potential for future development. F.G. Johnson **C** p110
Maintenance of hydro-electric plant. B.W. McMillan **C** p142

NETWORKS

Correlations of wave variables in a passive network. R.E. Bogner and B.R. Davis **G** p165
Direct analysis of stray-insensitive switched-capacitor networks using signal flow graphs. G.S. Moschytz and J.J. Mulawka **G** p145
Flexible communication structure for distributed embedded systems. M. Sloman, J. Kramer, J. Magee and K. Twidle **E** p201
New approach for planning high-voltage transmission networks. S.M. El-Sobki, M.M. El-Metwally and M.A. Farrag **C** p256
Optimising the design of low-voltage cable networks. F.W. Walkden **C** p49
Performance of a trunk frame organisation for circuit/packet switching network. W. Yu, J.C. Majithia and J.W. Wong **F** p73
Range-space dynamics of scalar-variable-structure control systems. B.A. White **D** p35
Synthesis of non-series-parallel *LC* one-port networks. B. Shahzadi **G** p181 **G** e250

Traffic performance characterisation of a personal radiocommunication system. V.R. Kolavennu, S.S. Rappaport, R.R. Duersch, H.L. Lester and C.M. Puckette F p550
Two new Miller theorems. C. Miron, P. Ogrutan and E. Wardegger G p271
Use of toleranced 'cost' functions for circuit routing in complex communications networks. R. Benjamin F p205

NOISE AND INTERFERENCE

A new UK national standard of electrical noise at 77 K in WG15. M.W. Sinclair, A.M. Wallace and B. Thornley A p587
Coherent radar detection in log-normal clutter. A. Farina, A. Russo and F.A. Studer F p39
Combined enhancement and adaptive transform coding of noisy speech. Y. Ephraim and D. Malah F p81 F e137
Further analysis of bandlimited 16-ary QAM signalling in satellite channels. A.H. Aghvami F p232
Go-back-*N* ARQ scheme with buffer at the receiver. G. Benelli F p271
Low-noise power-efficient oscillators: theory and design. J.K.A. Everard G p172
Performance comparison of detection methods derived from maximum-likelihood sequence estimation. A.D. Fagan and F.D. O'Keane F p535
Performance of 64-QAM, 225-QPRS and 256-QAM in a cochannel interference environment. K.-T. Wu and K. Feher F p576
RF power injected into the DC yard by an HVDC convertor pole. R.V. DeVore and E.P. Bohley C e80

NONDESTRUCTIVE TESTING

Nondestructive metal sheet testing using the phase angle of the electromagnetic fields. G.A. Girgis and A. Bastawros A p137
Rotor winding short detection. J.W. Wood and R.T. Hindmarch B p181

NONLINEAR SYSTEMS

Approach to the analysis of nonlinear feedback oscillators under large-signal injection. E.F. Calandra and A.M. Sommariva G p233 G e284
Biomedical engineering approach of pharmacokinetic problems: computer-aided design in pharmacokinetics and bioprocessing. A. Segui, J.P. Lebaron and R. Leverge D p217
Chaos in Chua's circuit. F. Ayrom and G.-Q. Zhong D p307
Modulational instability in a nonlinear transmission line. K. Fukushima A p261
Observations-weighted minimum-variance control of nonlinear systems. M.J. Grimble D p172
On the controllability of a class of nonlinear systems with time-varying multiple delays in control. K. Balachandran D p297
Range-space dynamics of scalar-variable-structure control systems. B.A. White D p35
Short-time spectrum analyser based on delta-sigma modulation. E.C. Georgoudis and D. Lagoyannis G p295

NUMERICAL ANALYSIS

Elimination algorithm: a method for fault diagnosis in combinational circuits based on an effect-cause analysis. J.M. Solana, J.A. Michell and S. Bracho E p31
Family of curves for the rough surface reflection coefficient. A.R. Miller and E. Vegh H p483
Lateral analysis of conventional and field-induced junction solar cells. Z. Meglicki, E.L. Heasell and A.G. Nassibian J p149
New method to evaluate the Fourier transform of a two-dimensional window function with piecewise continuous boundaries. Application in antenna theory. P.A. Beeckman H p291
Numerical solution of scattering from coated bodies of revolution using different integral equation formulations. A.A. Kishk and L. Shafai H p227
Parallel algorithm for shortest paths. R.K. Ghosh and G.P. Bhattacharjee E p87
Partitioned array for stable matrix triangularisation. L. Ciminiera, A. Serra and A. Valenzano E p45
Recent developments in the analysis of reflector antennas. A review. G. Franceschetti and A. Mohsen H p65
Spectral decomposition and extrapolation of variations in electricity loading. S.P. Moutter, P.S. Bodger and P.T. Gough C p247

OPTICAL FIBRES

Design considerations for circularly form-birefringent optical fibres. Y. Fujii and C.D. Hussey J p249
Dielectric-fibre surface waveguides for optical frequencies. K.C. Kao and G.A. Hockham J p191
Digital pulse position modulation over optical fibres with avalanche photodiode receivers. J.J.O. Pires and J.R.F. da Rocha J p309
Hydrogen effects in installed cables and under accelerated conditions. K.W. Plessner, S.J. Stannard-Powell, C.J. White and A.D. Iddin J p124
Optical fibres: the Southampton scene. W.A. Gambling J p205
Possible model for the degradation due to hydrogen of multimode fibre. M. Fox, K.W. Plessner and S.J. Stannard-Powell J p129
Research aiming for future optoelectronic integration. The Optoelectronics Joint Research Laboratory. I. Hayashi J p237
Some memories of the early years with optical fibres at the British Post Office: a personal account. R.B. Dyott J p199
Sources and detectors for optical fibre communications applications: the first 20 years. D.H. Newman and S. Ritchie J p213
Stimulated Raman scattering in optical fibres: the design of distortion-free transmission. W.P. Urquhart and P.J.R. Laybourn J p327
Suppression of stimulated Brillouin backscattering by PSK modulation for high-power optical transmission. A. Hadjifotiou and G.A. Hill J p256
Tapering of single-mode optical fibres. A.C. Boucouvalas and G. Georgiou J p385
The birth of optical communications. A.E. Karbowiak J p202

OPTICAL PROCESSING

Dynamic frequency plane correlator. I.R. Cooper, M.G. Nicholson and C.R. Petts J p70
Evaluation of an nMOS VLSI array for an adaptive liquid-crystal spatial light modulator. I. Underwood, D.G. Vass and R.M. Sillitto J p77
High-dynamic-range interferometric Bragg-cell spectrum analyser. J. Mellis, G.R. Adams and K.D. Ward J p26
Organic photochromics for spatial light modulation. C.J.G. Kirkby and I. Bennion J p98

OPTICAL SENSORS

Photo-induced discharge effects of ZnO semiconductor powder-resin binder layers. A.Y.C. Chan and C. Juhasz I p203

OPTICAL SYSTEMS

Observations of intermodulation effects in an integrated optical spectrum analyser. J. Singh and R.M. De La Rue J p105
Theoretical study of the interferometric Bragg-cell spectrum analyser. W.A. Wilby and P.V. Gatenby J p47
Use of pseudo-error monitoring schemes in optical communications. P.A. Davies and M. Sherif J p371

OPTICAL TRANSMISSION

Stimulated Raman scattering in optical fibres: the design of distortion-free transmission. W.P. Urquhart and P.J.R. Laybourn J p327

OPTICAL WAVEGUIDES

Core-mode cutoff for finite-cladding lightguides. R.J. Black and R. Bourbonnais J p377

OPTICS

Development of liquid crystal light valves using $Bi_{12}SiO_{20}$ as the photoconductor. Part 1: Charge trapping and its effect on device resolution. S.S. Makh, A.D. Hart, P.M. Openshaw and W.L. Baillie J p60
Development of liquid crystal light valves using $Bi_{12}SiO_{20}$ as the photoconductor. Part 2: Device performance. W.L. Baillie, P.M. Openshaw, A.D. Hart and S.S. Makh J p65

OPTIMAL CONTROL

Application of modern control for biotechnological processes. A. Munack and M. Thoma D p194
Fixed-wing-angle BTT control. D.J. Roddy and G.W. Irwin D p111
Observations-weighted minimum-variance control of nonlinear systems. M.J. Grimble D p172

OPTIMISATION

Application of modern control for biotechnological processes. A. Munack and M. Thoma D p194
Constrained optimisation in the PECOD program. X.M. Xiao and Y.C. Shen G p159
Optimisation philosophy of acquisition process for tracking radar. Wang Li and Qiao Xiaolin F p493
Optimised microelectronic power control of an AC drive for an electric vehicle. W.K. Loh and A.C. Renfrew B p291
Review of distribution system planning models: a model for optimal multistage planning. T. Gönen and I.J. Ramirez-Rosado C p397

OPTOELECTRONICS

10^{12} bit/s optoelectronics technology. C.K. Kao J p230
Analysis and design of optical lowpass multilayer filters via noncommensurate to pseudocommensurate system transformation. T.C. Chen J p359
Analysis of optical writing mode in solid-state imaging devices with inherent MNOS memory. T. Ando, H. Yamasaki and T. Sugishita I p6
Avalanche diode harmonic optoelectronic mixer. A.J. Seeds and B. Lenoir J p353
Characterisation of proton-exchange slab optical waveguides in X-cut $LiNbO_3$. K.K. Wong, A.C.G. Nutt, D.F. Clark, J. Winfield, P.J.R. Laybourn and R.M. De La Rue J p113
Contrast variations in high-level multiplexed twisted nematic liquid-crystal displays. J.R. Hughes I p145
Generalised open resonator theory. Kwai-Man Luk J p293
Optical fibres: the Southampton scene. W.A. Gambling J p205
Optimisation of four- and five-layer $Al_xGa_{1-x}As/GaAs$ large optical cavity lasers for high power, low threshold current density operation. B. Garrett and J.E.A. Whiteaway J p319
Photo-induced discharge effects of ZnO semiconductor powder-resin binder layers. A.Y.C. Chan and C. Juhasz I p203
Research aiming for future optoelectronic integration. The Optoelectronics Joint Research Laboratory. I. Hayashi J p237
Sources and detectors for optical fibre communications applications: the first 20 years. D.H. Newman and S. Ritchie J p213
US Navy beginnings in fibre optics. D.J. Albares J p211

OSCILLATORS

Approach to the analysis of nonlinear feedback oscillators under large-signal injection. E.F. Calandra and A.M. Sommariva G p233 G e284
Low-noise power-efficient oscillators: theory and design. J.K.A. Everard G p172
Optical control of W-band impatt oscillators. J.F. Singleton, A.J. Seeds and S.P. Brunt J p349
Precise insensitive tunable *RC*-oscillator realisation using current conveyors. R. Nandi G p129

OVERHEAD LINES

Application of protective devices to radial overhead line networks. A. Headley, E.P. Burdis and T. Kelsey C p437
Application of wooden poles for distribution lines. W.C. Sayer C p425
Breakdown characteristics of insulator strings stressed by short tail waves. C. Gary, R. Garabedian, Z. Zhang, D. Cristescu and R. Enache A p552
Overhead distribution lines — some reflections on design. G. Orawski, J. Bradbury and M.J. Vanner C p409

OVERVOLTAGES

Suppression of the high-frequency disturbances in low-voltage circuits caused by disconnector operation in high-voltage open-air substations. M.S. Savic C p293

Transformer inrush currents and their associated overvoltages in HVDC schemes. R. Yacamini and A. Abu-Nasser C p353
Transient overvoltages on power systems. J.P. Bickford and A.G. Heaton C p201
UHV air insulation:physical and engineering research (Editorial). R.T. Waters p. 393. A p393

PATTERN RECOGNITION

Computer simulation of hybrid cross-correlators. N. Collings and P. Lindstrom J p31
Novel data packing algorithm for improved string matching. M.R. Titchener E p185

PERMITTIVITY

Contrast variations in high-level multiplexed twisted nematic liquid-crystal displays. J.R. Hughes I p145
Measurements of permittivity by the use of surface waves in open and closed structures. A. Marincic, F.A. Benson and J.M. Tealby H p441

PERTURBATION THEORY

Perturbation technique for fields and forces due to current filaments moving above a conducting plate of finite thickness. V. Subba Rao A p129
Principal direction alignment: a geometric framework for the complete solution to the μ-problem. R.W. Daniel, B. Kouvaritakis and H. Latchman D p45

PHASING AND PHASE CONTROL

New approach to ultra-high-speed phase selection in single-pole autoreclosure schemes. A.T. Johns and M.M. El-Din Mahmoud C p188
Significance of phase distortion in digital transmission systems. F. Takawira and D.G.W. Ingram F p115

PHYSICAL PROPERTIES

A new national electrical noise standard in X-band. M.W. Sinclair and A.M. Wallace A p272
Coppers for electrical purposes. V.A. Callcut A p174
Low-frequency electrical characteristics of fresh concrete. H.W. Whittingon and J.G. Wilson A p265
Model of the formation of a dry band on an NaCl-polluted insulation. C. Texier and B. Kouadri A p285
Modelling gamma-source backscatter density gauges. I.A. Henderson and J. McGhee A p611
The influence of vibration on the initiation of trees in dielectrics. M.N. Arbab and D.W. Auckland A p618

PLANT CONDITION MONITORING

Editorial: Plant condition monitoring. J.R. Smith B p141
Monitoring generators and large motors. P.J. Tavner, B.G. Gaydon and D.M. Ward B p169
Performance monitoring of diesel electricity generation. H.W. Whittington, J.R. Jordan, N. Paterson and P.M. Johnson B p149
Rotor winding short detection. J.W. Wood and R.T. Hindmarch B p181
Trends and future scope in the monitoring of large steam turbine generators. P.A.L. Ham B p164
Vibration and current monitoring for detecting airgap eccentricity in large induction motors. J.R. Cameron, W.T. Thomson and A.B. Dow B p155

PLASMAS

Characterisation of plasma in a rail gun. P.K. Ray A p38

POLES AND ZEROS

Adaptive controller with desired pole/zero assignment. C.-M. Lin and B.-S. Chen D p301
Representation and transient behaviour of self-tuning controller for deterministic disturbances. T.S. Ng and M.A. Magdy D p285
Self-tuning control of offset using a moving average filter. C.S. Berger D p184

POLYNOMIALS

Adaptive controller with desired pole/zero assignment. C.-M. Lin and B.-S. Chen D p301
On the splitting of a complex-coefficient polynomial. M. de P. Barros and L.F. Lind G p95

POWER CONVERSION

Simple new PWM patterns for thyristor three-phase AC/DC convertors. S.K. Biswas, M.S. Mahesh and B.S.R. Iyengar B p354

POWER ELECTRONICS

Analysis of the periodic transient state of a static Kramer drive. J.E. Brown, W. Drury, B.L. Jones and P. Vas B p21
Applications of a power chopper to the thyristor Scherbius. K. Taniguchi and H. Mori B p225
Arbitrary space charge to bulk boundary model of Auger recombination for semiconductor power diodes. I.A. Henderson and J. McGhee I p169
Calculation of effective inductance of gapped core assemblies. P.D. Evans and B.M. Saied B p41
DC link current in PWM inverters. P.D. Evans and R.J. Hill-Cottingham B p217
Electrical instability in a voltage source inverter-fed induction motor drive at constant speed. M.M. Ahmed, J.A. Taufiq, C.J. Goodman and M. Lockwood B p299
High-efficiency on-board battery charger with transformer isolation, sinusoidal input current and maximum power factor. J.Ch. Bendien, G. Fregien and J.D. van Wyk B p197
Modelling the DC characteristics of VMOS power transistors for computer-aided design. M.T. Abuelma'atti I p161
New PWM switching strategy for microprocessor controlled inverter drives. S.R. Bowes and A. Midoun B p237
Novel type of high-frequency link inverter for photovoltaic residential applications. P. Savary, M. Nakaoka and T. Maruhashi B p279
Optimised microelectronic power control of an AC drive for an electric vehicle. W.K. Loh and A.C. Renfrew B p291
Power electronics, control of the electromechanical energy conversion process and some applications. J.D. van Wyk, H.-Ch. Skudelny and A. Müller-Hellmann B p369
Thyristor controlled reactors as harmonic sources in HVDC convertor stations and AC systems. R. Yacamini and J.W. Resende B p263

POWER SYSTEM PROTECTION

Fundamental aspects of fault location algorithms used in distance protection. V. Cook C p359
Application of protective devices to radial overhead line networks. A. Headley, E.P. Burdis and T. Kelsey C p437
Differential protection of multi-ended circuits. C.B. Gray and P.N.P. Singh C p59
Faults in parallel cables. C. Showghi C p270
Overcoming problems associated with impedance measurement in pole slipping protection for Dinorwig. J.L.H. Goody C p44
Proximity effect between an earthing grid and external earthing electrodes in an earthing system of high-voltage installations. Lj.M. Popovic C p346
Study of airgap breakdown characteristics under ambient conditions of reduced air density. A.J. Eriksson, B.C. le Roux, H.J. Geldenhuys and D.V. Meal A p485
Suppression of the high-frequency disturbances in low-voltage circuits caused by disconnector operation in high-voltage open-air substations. M.S. Savic C p293

POWER SYSTEMS AND PLANT

A statistical method for optimising wind power contribution in a diesel supplied network. A.J. Tsitsovits and L.L. Freris C e66
Analysis of transient stability of a multimachine power system using a variable gradient Lyapunov function. A.V. Machias C p81
Catastrophe theory applied to transient stability assessment of power systems. M.D. Wvong and A.M. Mihirig C p314
Characterising the power system at a load busbar by measurement. P.M. Hart C p87
Comprehensive calculation of convertor harmonics with system impedances and control representation. R. Yacamini and J.C. de Oliveira B p95
Control of hydro-electric plant. E.G. Davidson C p145
Determination of stabiliser settings in multimachine power systems. V.N. Degtyarev and B.J. Cory C p308
Development of coherency-based time-domain equivalent model using structure constraints. R. Nath and S.S. Lamba C p165
Developments in phase-variable modelling for thyristor-controlled reactive-power compensators. W.D. Humpage and T.T. Nguyen C p277
Economics and reliability of supply of developing power systems. A.O. Ekwue C p373
Electrical auxiliary supply systems for hydro-electric power plants. J.A. Wade C p148
Frequency tracking for power system control. S.A. McIlwaine, C.E. Tindall and W. McClay C p95
Hong Kong mass transit railway power supply system. P. Lawton and F.J. Murphy C p462
How HVDC schemes can excite torsional oscillations in turbo-alternator shafts. R. Yacamini C p301
Incorporation of weather effects in transmission system models for composite system adequacy evaluation. R. Billinton and L. Cheng C p319
Offshore electrical systems. J.R. Bromhead C p457
Optimal thermal unit scheduling using improved dynamic programming algorithm. S.D. Bond and B. Fox C p1
Performance monitoring of diesel electricity generation. H.W. Whittington, J.R. Jordan, N. Paterson and P.M. Johnson B p149
Self-tuning stabiliser for a multimachine power system. Shi-jie Cheng, O.P. Malik and G.S. Hope C p176
Semi-rigorous thermal unit commitment for large scale electrical power systems. E. Khodaverdian, A. Brameller and R.M. Dunnett C p157
Swing busbar reactive power generation constraints in power flow calculations. P.B. Prada C p186
Thyristor controlled reactors as harmonic sources in HVDC convertor stations and AC systems. R. Yacamini and J.W. Resende B p263
Transient overvoltages on power systems. J.P. Bickford and A.G. Heaton C p201

POWER TRANSMISSION AND DISTRIBUTION

Application of protective devices to radial overhead line networks. A. Headley, E.P. Burdis and T. Kelsey C p437
Calculations of power cable load capability on a desktop computer: a review. G.J. Anders, M.A. El-Kady, R.W.D. Ganton, D.J. Horrocks and J. Motlis C p431
Comparing distribution practices. C.S. Parmenter C p389
Design and development of public distribution supply systems. H. Hammersley C p370
Economics and reliability of supply of developing power systems. A.O. Ekwue C p373
French distribution systems: basic features and practices. R. Tellier and G. Gallet C p377
Jamuna River 230 kV crossing, Bangladesh—Pt. 1: Design. J.A. Chandler, L.W. Hinch, D.A. Hughes, D.M. McDowell, P.W. Rowe and A.B. Wood C d226
Jamuna River 230 kV crossing, Bangladesh—Pt. 2: Construction. J.A. Chandler, L.W. Hinch, R.I. Fair, D.A. Hughes, J. Peraino and P.W. Rowe C d226
New approach for planning high-voltage transmission networks. S.M. El-Sobki, M.M. El-Metwally and M.A. Farrag C p256
Planning of distribution systems in developing countries. S.G. Menon and B.B.V.R. Rao C p384
RF power injected into the DC yard by an HVDC convertor pole. R.V. DeVore and E.P. Bohley C e80

POWER UTILISATION AND INDUSTRIAL APPLICATIONS

Interior Lighting. D. Fischer B p115
Novel technique for the design of induction billet heaters. A.K.M. Al-Shaikhli and L. Hobson B p323
Novel type of high-frequency link inverter for photovoltaic residential applications. P. Savary, M. Nakaoka and T. Maruhashi B p279
Statistical electricity demand modelling from consumer billing data. G.W. Irwin, W. Monteith and W.C. Beattie C p328

PROCESS CONTROL

Approximate models in multivariable process control: An inverse Nyquist array and robust tuning regulator interpretation. D.H. Owens and A. Chotai D p1
Control in bioprocessing (Editorial). J.R. Leigh and M. Thoma p. 193. J.R. Leigh and M. Thoma D p193
Mathematical description of the behaviour of *Chaetomium cellulolyticum*: modelling of the growth on glucose and cellulose substrate. W. Scheiding, M. Thoma, V. Hecht, W. Rosen and K. Schügerl D p199

PRODUCTION ENGINEERING

From new technologies to profitable products. S.L.H. Clarke, D.E. Hooper, J. Clement-Jones and G.N. Taylor A p71
Identifying a product strategy. A.J. Wheeldon A p623

PROJECT AND PRODUCTION ENGINEERING

'Silicon Glen' — myth or reality?. J.H. Collins F p2
A systems engineering approach to software development. A. Chandler A p355
All at sea. Sir Lindsay Bryson A p1
Design of control systems from a systems engineering point of view. M.J. Whitmarsh-Everiss A p341
Discussion on IEE Colloquium on systems engineering: its nature and scope. D.L. Johnson A p358
Editorial: Systems engineering: its nature and scope. D.L. Johnston. A p329
Engineering for the market. D.H.O. Allen A p16
Evolution towards automation. R.T. Beaty A p332
From new technologies to profitable products. S.L.H. Clarke, D.E. Hooper, J. Clement-Jones and G.N. Taylor A p71
Identifying a product strategy. A.J. Wheeldon A p623
Managing system creation. D.K. Hitchins A p343
Systems engineering approach to the major capital projects in BP. N.W. Francis A p338
Systems engineering: a proposed definition. P.K. M'Pherson A p330
The architecture of maritime systems. K.J. Rawson A p333

PROPAGATION IN RANDOM MEDIA

Microwave backscattering from a layer of randomly oriented discs with application to scattering from vegetation. Ş.S. Şeker H p497

RADAR AND RADIONAVIGATION

Accurate analysis of latching phase shifters. W. Hauth H p165
Acousto-optic ambiguity function processor. R.J. Sadler and M.R. Buttinger J p35
Adaptive variable update rate algorithm for tracking targets with a phased array radar. S.A. Cohen F p277
All at sea. Sir Lindsay Bryson A p1
Application of multistatic radar principles to short-range imaging. J. Detlefsen F p658
Bistatic and multistatic radar (Editorial). C. Pell and E. Hanle F p585
Bistatic/multistatic radar bibliography. E. Hanle, A. Farina and C. Pell F p664
Cell-averaging CFAR for multiple-target situations. B. Barboy, A. Lomes and E. Perkalski F p176
Coherent radar detection in log-normal clutter. A. Farina, A. Russo and F.A. Studer F p39
Comparison of adaptive cell-averaging detectors for multiple-target situations. E.K. Al-Hussaini and B.M. Ibrahim F p217
Concepts and techniques for real-time optical synthetic aperture radar data processing. C.D. Daniel J p7
Discrimination of radar clutter by texture analysis. M. Ogata, M. Sekine and T. Musha F p257
Distributed detection of Swerling targets. R. Srinivasan, P. Sharma and V. Malik F p624
Distributed radar detection theory. R. Srinivasan F p55
Doubly co-operative ternary sequences. K. Venkata Rao, P.S. Moharir and S.K. Varma F p61
Editorial: Historical radar. E.H. Putley F p210
Fifty years of bistatic and multistatic radar. J.I. Glaser F p596
Method for prediction of attenuation on earth-space links based on radar measurements of the physical structure of rainfall. M.J. Leitao and P.A. Watson F p429
Mixed triangulation/trilateration technique for emitter location. F.J. Berle F p638
Multiplier-free filters for ground clutter suppression. R. Klemm F p12
Optimisation philosophy of acquisition process for tracking radar. Wang Li and Qiao Xiaolin F p493
Overview of detection theory in multistatic radar. E. D'Addio and A. Farina F p613
Radar cross-section of thin dielectric bodies. Ş.S. Şeker H p305
Recursive estimation with uncertain observations in a multisensor environment. R.K. Varshney and P.K. Varshney F p527
Semicoherent Doppler processing technique. F.R. Castella and R.E. Thurber F p87
Spaceborne bistatic radar — an overview. Y.S. Hsu and D.C. Lorti F p642
Stochastic modelling of radar returns. P. Thomas and S. Haykin F p476
Survey of bistatic and multistatic radar. E. Hanle F p587
Television-based bistatic radar. H.D. Griffiths and N.R.W. Long F p649
The geometry of bistatic radar systems. M.C. Jackson F p604
Tracking function in bistatic and multistatic radar systems. A. Farina F p630
Waveform design and Doppler sensitivity analysis for nonlinear FM chirp pulses. J.A. Johnston and A.C. Fairhead F p163

RADIATION

Image reconstruction using the transputer. N. Kingswood, E.L. Dagless, R.M. Belchamber, D. Betteridge, T. Lilley and J.D.M. Roberts E p139 I p99
Modelling gamma-source backscatter density gauges. I.A. Henderson and J. McGhee A p611

RADIO ASTRONOMY

Blockage due to subreflector supports in large radiotelescope antennas. J.W. Lamb and A.D. Olver H p43

RADIO-WAVE PROPAGATION (GROUND WAVE)

Geometrical theories of wave propagation: a contemporary review. J.M. Arnold J p165

RADIO-WAVE PROPAGATION (IONOSPHERIC)

FMCW channel sounder with digital processing for measuring the coherence of wideband HF radio links. S. Salous F p456

RADIO-WAVE PROPAGATION (MICROWAVE)

Bibliography on propagation factors affecting microwave links operating in the 10 GHz to 30 GHz frequency range. S.J. Roome H p50
Method for prediction of attenuation on earth-space links based on radar measurements of the physical structure of rainfall. M.J. Leitao and P.A. Watson F p429
Review of propagation characteristics and prediction for satellite links at frequencies of 10–40 GHz. P.G. Davies and J.A. Lane F p420

RADIO-WAVE PROPAGATION (MILLIMETRE WAVE)

Bibliography on propagation factors affecting microwave links operating in the 10 GHz to 30 GHz frequency range. S.J. Roome H p50
Microwave propagation in dust storms: a review. S.O. Bashir and N.J. McEwan H p241
Millimetre-wave rain induced attenuation: theory and experiment. F.C. Medeiros Filho, R.S. Cole and A.D. Sarma H p308
Radiometric sky temperature measurements at 35 and 89 GHz. A.D. Sayers J p233

RADIO-WAVE PROPAGATION (TERRAIN EFFECTS)

Crosscorrelation between the envelopes of 900 MHz signals received at a mobile radio base station site. F. Adachi, M.T. Feeney, A.G. Williamson and J.D. Parsons F p506
Family of curves for the rough surface reflection coefficient. A.R. Miller and E. Vegh H p483

RADIOCOMMUNICATION

A renting system for radio spectrum?. D. Rudd A p58
Assessment of Kalman-filter channel estimators for an HF radio link. A.P. Clark and R. Harun F p513
Comparison of strategies for serial acquisition of frequency-hopped spread-spectrum signals. C.A. Putman, S.S. Rappaport and D.L. Schilling F p129
Crosscorrelation between the envelopes of 900 MHz signals received at a mobile radio base station site. F. Adachi, M.T. Feeney, A.G. Williamson and J.D. Parsons F p506
FMCW channel sounder with digital processing for measuring the coherence of wideband HF radio links. S. Salous F p456
Factors affecting use and design of spread-spectrum modems for the HF band. A.N. Ince and R.E. Schemel F p187
New channel assignment strategy in cellular mobile radiocommunication systems. B. Arazi F p569
Review of propagation characteristics and prediction for satellite links at frequencies of 10–40 GHz. P.G. Davies and J.A. Lane F p420
Satellite broadcasting of sound radio. J.H. Stott F p399
Satellite-borne active phased array techniques for mobile communications. P.G. Sheehan and J.R. Forrest F p339
Theoretical performance of an adaptive frequency-hopping modem at HF. P. Doany and G.F. Gott F p470
Traffic performance characterisation of a personal radiocommunication system. V.R. Kolavennu, S.S. Rappaport, R.R. Duersch, H.L. Lester and C.M. Puckette F p550

RADIONAVIGATION

Reception of Decca Navigator multipulse and zone identification transmissions by single-channel receivers. J.D. Last and D.K. Linsdall F p463

RAILWAY ELECTRIFICATION AND TRANSPORTATION

Electrical instability in a voltage source inverter-fed induction motor drive at constant speed. M.M. Ahmed, J.A. Taufiq, C.J. Goodman and M. Lockwood B p299
Hong Kong mass transit railway power supply system. P. Lawton and F.J. Murphy C p462
Railway signalling compatability of inverter fed induction motor drives for rapid transit. J.A. Taufiq, C.J. Goodman and B. Mellitt B p71

RECEIVERS

Distributed radar detection theory. R. Srinivasan F p55
Go-back-*N* ARQ scheme with buffer at the receiver. G. Benelli F p271
Low-power integrable paging receiver architecture. C.B. Marshall F p449
Reception of Decca Navigator multipulse and zone identification transmissions by single-channel receivers. J.D. Last and D.K. Linsdall F p463

RELIABILITY

Economics and reliability of supply of developing power systems. A.O. Ekwue C p373
Flexible fault tolerance for distributed computer systems. O.G. Loques and J. Kramer E p319
Incorporation of weather effects in transmission system models for composite system adequacy evaluation. R. Billinton and L. Cheng C p319
Processor failure recovery for a resource sharing algorithm. I.A. Newman, R.P. Stallard and M.C. Woodward E p79
Reliability prediction: a state-of-the-art review. P.D.T. O'Connor and L.N. Harris A p202
The inclusion of load correlation in the frequency and duration approach for generating capacity reliability evaluation. C.L. Wee and R. Billinton C p6

RELUCTANCE MOTORS

Analytical prediction of torque and inductance characteristics of identically slotted doubly-salient reluctance motors. H.B. Ertan B p230
Finite-element analysis characterisation of a switched reluctance motor with multitooth per stator pole. J.F. Lindsay, R. Arumugam and R. Krishnan B p347
Switched reluctance motor for rail traction. I. Obradović B p46

REMOTE SENSING

Microwave backscattering from a layer of randomly oriented discs with application to scattering from vegetation. Ş.S. Şeker H p497
Radiometric sky temperature measurements at 35 and 89 GHz. A.D. Sayers J p233

REVIEWS OF PROGRESS

Applications of built-in-test equipment within large systems. W.R. Moore and R.I. Damper G p221
Automotive electronics. M.H. Westbrook A p241
Design and operation perspective of a British UHV laboratory. H.M. Ryan and J. Whiskard A p501
Fifty years of bistatic and multistatic radar. J.I. Glaser F p596
Geometrical theories of wave propagation: a contemporary review. J.M. Arnold J p165
Hydro-electric power in the UK: past performance and potential for future development. F.G. Johnson C p110
The 1985 Lord Nelson of Stafford Lecture Electricity in the UK. Lord Marshall of Goring A p119

SATELLITE LINKS AND SPACE COMMUNICATION

Assignment of channels and polarisations in a broadcasting satellite service environment. J.M.P. Fortes F p370
Baseband switches and transmultiplexers for use in an on-board processing mobile/business satellite system. B.G. Evans, F.P. Coakley, M.H.M. El-Amin, S.C. Lu and C.W. Wong F p356
Development of spacecraft solid-state high-power L-band amplifiers. C.D. Seymour F p326
Digital pseudo-analogue satellite TV transmission system. M. Tomlinson, C. Ward and M. Rendle F p384
Experimental study of a slotted telemetry antenna array with a shaped beam for satellite communication. S.P. Mathur, A.K. Sinha and A.K. Sinha H p490
Further analysis of bandlimited 16-ary QAM signalling in satellite channels. A.H. Aghvami F p232
Inmarsat's second-generation satellites. P. Berlin F p406
Method for prediction of attenuation on earth-space links based on radar measurements of the physical structure of rainfall. M.J. Leitao and P.A. Watson F p429
Military aeronautical satellite communications. D. Cummings and C.G. Wildey F p411
Multibeam SS-TDMA design considerations related to the Olympus Specialised Services Payload. N. Watt F p319
Review of propagation characteristics and prediction for satellite links at frequencies of 10–40 GHz. P.G. Davies and J.A. Lane F p420
Satellite broadcasting of sound radio. J.H. Stott F p399
Satellite-borne active phased array techniques for mobile communications. P.G. Sheehan and J.R. Forrest F p339
The C-MAC/packet system for satellite broadcasting. J.S. Lothian and H.J. O'Neill F p374
Transmit and receive filters for QPSK signals to optimise the performance on linear and hard-limited channels. N.G. Kingsbury F p345
WARC-ORB(1) and the international regulation of satellite communications. J. Durkin and D.J. Withers F p364

SCHOTTKY-BARRIER DEVICES

Novel dynamic random access memory cell using three diodes. Y.C. Jeung I p61
Stability of Schottky barriers at high temperatures for use in GaAs MESFET technology. D.A. Allan I p18

SEMICONDUCTOR DEVICES AND MATERIALS

'Silicon Glen' — myth or reality?. J.H. Collins F p2
Analysis of optical writing mode in solid-state imaging devices with inherent MNOS memory. T. Ando, H. Yamasaki and T. Sugishita I p6
Arbitrary space charge to bulk boundary model of Auger recombination for semiconductor power diodes. I.A. Henderson and J. McGhee I p169
Cell-based design: a review. J. Fox E p117 I p77
Distributed charge (sub)micron MOS transistor model. J.-J. Charlot and S. Toutain J p207
Elimination of surface current induced failure in millimetre-wave Baritt diodes. J. Freyer, U. Guettich and M. Claassen I p25
First-order parameter extraction on enhancement silicon MOS transistors. M.F. Hamer I p49
GaAs $n^+i\delta p^+in^+$ barrier transistor with ultra-thin p^+AlGaAs base prepared by molecular beam epitaxy. W.C. Liu, Y.H. Wang, C.Y. Chang and S.A. Liao I p47
High-injection open-circuit voltage decay in p–n-junction diodes with lightly doped bases. D.H.J. Totterdell, J.W. Leake and S.C. Jain I p181
Hot, tepid and temperate electrons in bulk GaAs. C. Moglestue I p35
Interfacial problems in preparing a-Si : H FETs. W.Z. Manookian and J.I.B. Wilson I p153
Isolated Al-SiN-(p)Si-(n)Si MISS device. C.Y. Chang, B.C. Fang, Y.D. Wang and F.C. Tzeng I p189
Novel dynamic random access memory cell using three diodes. Y.C. Jeung I p61
Photo-induced discharge effects of ZnO semiconductor powder-resin binder layers. A.Y.C. Chan and C. Juhasz I p203
Quasilinear formulation with a simple remeshing scheme for the finite element based simulation of dopant diffusion in silicon. G.A.J. Amaratunga and R. Ismail I p221
Semiconductor memories. J.N. Barry and R.G. George E p8
Silicon-on-insulator technology. S.L. Partridge E p106 I p66
Stability of Schottky barriers at high temperatures for use in GaAs MESFET technology. D.A. Allan I p18
Taper etching of the thermal oxide layer. Y.I. Choi, C.K. Kim and Y.S. Kwon I p13
Voltage-controlled negative resistance in p^+-i-n^+ planar diodes with injection gate. S. Supadech, S. Okazaki, Y. Akiba, T. Kurosu and M. Iida I p1

SEMICONDUCTOR LASERS

Characteristics of the epitaxial semiconductor Raman laser. K. Suto and J. Nishizawa J p259
Comparison of current spreading in stripe contact semiconductor lasers. S.J. Chua, T.S. Low and P.C. Chen J p299
Control of astigmatism in proton isolated stripe AlGaAs double heterostructure lasers. D. Kerps and R. Engelmann J p267
Dynamic single-mode operation of DFB lasers with phase shifted gratings and reflecting mirrors. J. Buus J p163
Lateral current spreading in DH-lasers above threshold. J.P. Van de Capelle, P. Vankwikelberge and R. Baets J p143
Optical rise time and frequency chirping predictions for (forward-biased) optical absorption modulators. L.D. Westbrook J p273
Optimisation of four- and five-layer $Al_xGa_{1-x}As$/GaAs large optical cavity lasers for high power, low threshold current density operation. B. Garrett and J.E.A. Whiteaway J p319
Recombination coefficients in low-dimensional systems, with special reference to long-wavelength quaternary lasers. P.T. Landsberg and M.J. Adams J p118
Reduction of transient laser chirp in 1.5 μm DFB lasers by shaping the modulation pulse. L. Bickers and L.D. Westbrook J p155
Simple theory for the spectral properties of semiconductor lasers with reduced reflectivity. J. Buus J p121

SIGNAL PROCESSING

Acousto-optic ambiguity function processor. R.J. Sadler and M.R. Buttinger J p35
Assessment of Kalman-filter channel estimators for an HF radio link. A.P. Clark and R. Harun F p513
Baseband switches and transmultiplexers for use in an on-board processing mobile/business satellite system. B.G. Evans, F.P. Coakley, M.H.M. El-Amin, S.C. Lu and C.W. Wong F p356
Bistatic/multistatic radar bibliography. E. Hanle, A. Farina and C. Pell F p664
Closed-loop autocorrelator and its application to frequency discrimination. H. Messer and Y. Bar-Ness F p25
Combined enhancement and adaptive transform coding of noisy speech. Y. Ephraim and D. Malah F p81 F e137
Computer simulation of hybrid cross-correlators. N. Collings and P. Lindstrom J p31
Doubly co-operative ternary sequences. K. Venkata Rao, P.S. Moharir and S.K. Varma F p61
Equivalent linear span analysis of binary sequences having an interleaved structure. S. Prasad and L.C. Quynh F p288
Further analysis of bandlimited 16-ary QAM signalling in satellite channels. A.H. Aghvami F p232
Generalised crosscorrelator with data-estimated weighting function: a simulation analysis. L. Bedini, S. Fossi and R. Reggiannini F p195 F e231
Generation of representative members of an *RrSst* weighted median filter class. D.R.K. Brownrigg F p445
Hybrid constant factor incremental delta modulators. V.D. Mytri and A.P. Shivaprasad F p522
Method to design FIR Hilbert transformers for delta modulated signals. V. Anastassopoulos and T. Deliyannis G p113
New algorithm for transient suppression for images due to incomplete or partial boundary data. G. Eichmann and L.M. Roytman G p27
New class of sequence sets with good auto- and crosscorrelation functions. L.C. Quynh and S. Prasad F p281
Overview of detection theory in multistatic radar. E. D'Addio and A. Farina F p613
Performance comparison of detection methods derived from maximum-likelihood sequence estimation. A.D. Fagan and F.D. O'Keane F p535
Recursive estimation with uncertain observations in a multisensor environment. R.K. Varshney and P.K. Varshney F p527
Role for optical signal and image processing in the VLSI era. J.B.G. Roberts J p2
SCAPE: a single-chip array processing element for signal and image processing. R.M. Lea E p145 I p105
Spectral analysis of randomly sampled signals using a correlation-based slotting technique. J.B. Roberts and D.B.S. Ajmani F p153
Stimulated Raman scattering in optical fibres: the design of distortion-free transmission. W.P. Urquhart and P.J.R. Laybourn J p327
VLSI and WSI associative string processors for structured data processing. R.M. Lea E p153 I p113
Waveform design and Doppler sensitivity analysis for nonlinear FM chirp pulses. J.A. Johnston and A.C. Fairhead F p163

SIMULATION

Analysis of air-cored tubular induction motors. S. Williamson and P.J. Leonard B p285
Approximate models in multivariable process control: An inverse Nyquist array and robust tuning regulator interpretation. D.H. Owens and A. Chotai D p1
Decoupled boundary layer model of induction machines. O.T. Tan and G.G. Richards B p255
Designing active filters with linear transformations using off-the-shelf building blocks. J.A. Papadakis G p216
Discharge simulation. A.J. Davies A p217
Hot, tepid and temperate electrons in bulk GaAs. C. Moglestue I p35
MOTA: a MOSFET timing simulator. S.-J. Jou, C.-W. Jen, W.-Z. Shen and C.-L. Lee I p193
Measuring properties of IREQ's 5.4 MV voltage divider. R. Malewski A p523
Model of the formation of a dry band on an NaCl-polluted insulation. C. Texier and B. Kouadri A p285
Quasilinear formulation with a simple remeshing scheme for the finite element based simulation of dopant diffusion in silicon. G.A.J. Amaratunga and R. Ismail I p221
Recursive addition and its parameterisation in VLSI. H.C. Yung and C.R. Allen G p256
SCNSOP: a switched-capacitor circuit simulation and optimisation program. L. Yue and S.Y. Chao G p107
Stochastic modelling of radar returns. P. Thomas and S. Haykin F p476

SOLAR CELLS

Lateral analysis of conventional and field-induced junction solar cells. Z. Meglicki, E.L. Heasell and A.G. Nassibian J p149
Self-consistent detailed balance treatment of the solar cell. J.E. Parrott J p314
Simple automatic current/voltage characteristics plotter for solar cells and arrays. G. Bhattacharya and H. Saha G p289

SOUND BROADCASTING AND AUDIO

Satellite broadcasting of sound radio. J.H. Stott F p399

SPEECH SYNTHESIS

Designing a conversational speech interface. S.J. Young E p305

STABILISERS

Determination of stabiliser settings in multimachine power systems. V.N. Degtyarev and B.J. Cory C p308

STABILITY

Analysis of transient stability of a multimachine power system using a variable gradient Lyapunov function. A.V. Machias C p81
Catastrophe theory applied to transient stability assessment of power systems. M.D. Wvong and A.M. Mihirig C p314
Kharitonov's theorem and stability test of multidimensional digital filters. N.K. Bose and E. Zeheb G p187
Modulational instability in a nonlinear transmission line. K. Fukushima A p261
New approach to ultra-high-speed phase selection in single-pole autoreclosure schemes. A.T. Johns and M.M. El-Din Mahmoud C p188
Observations-weighted minimum-variance control of nonlinear systems. M.J. Grimble D p172
On minimisation of word length of multidimensional filter realisations. L.M. Roytman, E. Plotkin and M.N.S. Swamy G p35
Reply to comments on a simplified analytical stability test for systems with delay. D. Hertz, E.I. Jury and E. Zeheb D d142
Representation and transient behaviour of self-tuning controller for deterministic disturbances. T.S. Ng and M.A. Magdy D p285
Self-tuning stabiliser for a multimachine power system. Shi-jie Cheng, O.P. Malik and G.S. Hope C p176
Simplified analytical stability test for systems with delay. D. Hertz, E.I. Jury and E. Zeheb D d142
Stability characteristics of the Xi-core. C.B. Rajanathan, D.A. Lowther and E.M. Freeman A p89
Stability of Schottky barriers at high temperatures for use in GaAs MESFET technology. D.A. Allan I p18
Stable reduced-order models for discrete-time systems. M. Farsi, K. Warwick and M. Guilandoust D p137
Subsynchronous resonance of a power station with two identical generation units. G.D. Jennings, R.G. Harley and D.C. Levy C p33

STANDARDISATION AND STANDARDS

An electronic Doppler signal generator for assessing continuous-wave ultrasonic Doppler flowmeters. R.H. Smallwood and P. Dixon A p104
The computing industry and the relevance of the IEE. R.J. Scott-Kerr E p1

STEPPING MOTORS

Calculation of pull-out torque characteristics of hybrid stepping motors with current-regulating drive circuits. A.P. Russell and I.E.D. Pickup B p341
Magnetic permeance of aligned doubly salient structures. J.W. Finch B p365

SUPERCONDUCTIVITY

Three-dimensional quasi-static magnetic field in superconducting-rotor synchronous generators with a magnetic steel rotor screen. L. Leurs and R.L. Stoll C p69

SURFACE-ACOUSTIC-WAVE DEVICES (SAW)

Closed-loop autocorrelator and its application to frequency discrimination. H. Messer and Y. Bar-Ness F p25
High-dynamic-range interferometric Bragg-cell spectrum analyser. J. Mellis, G.R. Adams and K.D. Ward J p26

SWITCHED-CAPACITOR FILTERS

State-space switched capacitor filter design based on single-operational-amplifier biquads. V.I. Georgiev and K.P. Stantchev G p251

SWITCHES AND SWITCHING THEORY

Baseband switches and transmultiplexers for use in an on-board processing mobile/business satellite system. B.G. Evans, F.P. Coakley, M.H.M. El-Amin, S.C. Lu and C.W. Wong F p356
Multibeam SS-TDMA design considerations related to the Olympus Specialised Services Payload. N. Watt F p319

SWITCHGEAR

Application of protective devices to radial overhead line networks. A. Headley, E.P. Burdis and T. Kelsey C p437

SYNCHRONOUS MOTORS

Investigation into a class of brushless DC motor with quasisquare voltages and currents. H.R. Bolton, Y.D. Liu and N.M. Mallinson B p103

SYSTEM PROTECTION

Faults in parallel cables. C. Showghi C p270
Method of protecting distribution transformers connected solidly to an urban 11 kV network. T.M. White C p441
Modelling of substation grounding grids. A. El-Morshedy, A.G. Zeitoun and M.M. Ghourab C p287
Proximity effect between an earthing grid and external earthing electrodes in an earthing system of high-voltage installations. Lj.M. Popovic C p346
The calculation of inrush current in three-phase transformers. R. Yacamini and A. Abu-Nasser B p31

TELECOMMUNICATION

Combination of cancelling intersymbol interference and decoding of error-correcting code. R. Kohno, S. Pasupathy, H. Imai and M. Hatori F p224
Error correction in a reversed communications scenario. B. Arazi F p562
Go-back-*N* ARQ scheme with buffer at the receiver. G. Benelli F p271
Hybrid constant factor incremental delta modulators. V.D. Mytri and A.P. Shivaprasad F p522
Intersymbol interference and timing jitter performance of realisable data transmission filters. A. Adams and L.F. Lind F p21
Low-data-rate visual communication using cartoons: a comparison of data compression techniques. J.A. Robinson F p236
Multibeam SS-TDMA design considerations related to the Olympus Specialised Services Payload. N. Watt F p319
New class of *M*-ary communication systems using complementary sequences. I.M.I. Habbab and L.F. Turner F p293
OFTEL: a new approach to regulation. B. Carsberg A p152
Performance of 64-QAM, 225-QPRS and 256-QAM in a cochannel interference environment. K.-T. Wu and K. Feher F p576
Performance of a new class of binary communication systems. I.M.I. Habbab and L.F. Turner F p301
Power spectral density of digital continuous phase modulation with correlated data symbols. Part 1: Autocorrelation function method. P.K.M. Ho and P.J. McLane F p95 F e214
Power spectral density of digital continuous phase modulation with correlated data symbols. Part 2: Rowe-Prabhu method. P.K.M. Ho and P.J. McLane F p106 F e214
Satellite-borne active phased array techniques for mobile communications. P.G. Sheehan and J.R. Forrest F p339
Some useful criteria for the optimisation of phase code spectra. J.A.S. Redwood-Sawyerr and L.F. Lind F p16
The history of STC. P. Young A p319
Traffic performance characterisation of a personal radiocommunication system. V.R. Kolavennu, S.S. Rappaport, R.R. Duersch, H.L. Lester and C.M. Puckette F p550
Transmit and receive filters for QPSK signals to optimise the performance on linear and hard-limited channels. N.G. Kingsbury F p345

TELECOMMUNICATION TRAFFIC

Performance evaluation of a 512-QAM system in distorted channels. P. Mathiopoulos and K. Feher F p199 F e300
Performance of a trunk frame organisation for circuit/packet switching network. W. Yu, J.C. Majithia and J.W. Wong F p73
Traffic performance characterisation of a personal radiocommunication system. V.R. Kolavennu, S.S. Rappaport, R.R. Duersch, H.L. Lester and C.M. Puckette F p550

TELEPHONE EXCHANGES AND NETWORKS

OFTEL: a new approach to regulation. B. Carsberg A p152
The history of STC. P. Young A p319

TELEPHONY

The history of STC. P. Young A p319

TELEVISION

Digital pseudo-analogue satellite TV transmission system. M. Tomlinson, C. Ward and M. Rendle F p384
Seeing by electricity. R.W. Burns A p27
Television-based bistatic radar. H.D. Griffiths and N.R.W. Long F p649
The C–M A/C/packet system for satellite broadcasting. J.S. Lothian and H.J. O'Neill F p374

THYRISTORS

Analysis of the periodic transient state of a static Kramer drive. J.E. Brown, W. Drury, B.L. Jones and P. Vas B p21
Simple new PWM patterns for thyristor three-phase AC/DC convertors. S.K. Biswas, M.S. Mahesh and B.S.R. Iyengar B p354
Thyristor controlled reactors as harmonic sources in HVDC convertor stations and AC systems. R. Yacamini and J.W. Resende B p263

TOPOLOGY

Computer generation of topological equations and pseudocircuits for the self testing analogue fault diagnosis algorithm. C.-C. Wu and Y.-Y. Wu G p273
Direct analysis of stray-insensitive switched-capacitor networks using signal flow graphs. G.S. Moschytz and J.J. Mulawka G p145
Multiple fault location in AC circuits. J. Rutkowski and A. Macura G p279

TORQUE

Calculation of pull-out torque characteristics of hybrid stepping motors with current-regulating drive circuits. A.P. Russell and I.E.D. Pickup B p341

TRACTION

DC traction motor with slotless armature. E. Spooner B d367
Electrical instability in a voltage source inverter-fed induction motor drive at constant speed. M.M. Ahmed, J.A. Taufiq, C.J. Goodman and M. Lockwood B p299
Novel algorithm for generating near optimal PWM waveforms for AC traction drives. J.A. Taufiq, B. Mellitt and C.J. Goodman B p85
Power electronics, control of the electromechanical energy conversion process and some applications. J.D. van Wyk, H.-Ch. Skudelny and A. Müller-Hellmann B p369
Railway signalling compatability of inverter fed induction motor drives for rapid transit. J.A. Taufiq, C.J. Goodman and B. Mellitt B p71
Switched reluctance motor for rail traction. I. Obradović B p46

TRANSDUCERS

Digital linear transducer using a dynamic RAM. J.G. Lacy and M.P. Kennedy E p97

TRANSFORMERS

Comparing distribution practices. C.S. Parmenter C p389
Economic design of a 50 kVA distribution transformer. Part 1: The use of liquids of low flammability. D.F. Binns, A.B. Crompton and A. Jaberansari C p445

Economic design of a 50 kVA distribution transformer. Part 2: Effect of different core steels and loss capitalisations. D.F. Binns, A.B. Crompton and A. Jaberansari C p451
Method of protecting distribution transformers connected solidly to an urban 11 kV network. T.M. White C p441
Switching-impulse strength of the external insulation of three-phase power transformers. H. Studinger and K.-H. Weck A p534
The calculation of inrush current in three-phase transformers. R. Yacamini and A. Abu-Nasser B p31
Transformer inrush currents and their associated overvoltages in HVDC schemes. R. Yacamini and A. Abu-Nasser C p353

TRANSIENTS

A frequency-dependent transmission line model for electromagnetic transient studies. S.R. Naidu and F.N. de Lima C e66
Analysis of the periodic transient state of a static Kramer drive. J.E. Brown, W. Drury, B.L. Jones and P. Vas B p21
Catastrophe theory applied to transient stability assessment of power systems. M.D. Wvong and A.M. Mihirig C p314
Computation of optimal functions for transients of a photovoltaic array inverter induction motor generator. M. Barlaud, B. de Fornel, M. Gauvrit and J.P. Requier B p16
Suppression of the high-frequency disturbances in low-voltage circuits caused by disconnector operation in high-voltage open-air substations. M.S. Savic C p293
Transient calculation of a transmission line using superposition law. H. Nakanishi and A. Ametani C p263
Transient overvoltages on power systems. J.P. Bickford and A.G. Heaton C p201

TRANSISTORS

Accurate bias dependent linear model for bipolar transistors up to 6 GHz. K. Bharath Kumar, R. Krishnapur and T.B. Mondal I p214
Distributed charge (sub)micron MOS transistor model. J.-J. Charlot and S. Toutain J p207
First-order parameter extraction on enhancement silicon MOS transistors. M.F. Hamer I p49
GaAs $n^+i\delta p^+in^+$ barrier transistor with ultra-thin p^+AlGaAs base prepared by molecular beam epitaxy. W.C. Liu, Y.H. Wang, C.Y. Chang and S.A. Liao I p47
Interfacial problems in preparing a-Si : H FETs. W.Z. Manookian and J.I.B. Wilson I p153
Modelling the DC characteristics of VMOS power transistors for computer-aided design. M.T. Abuelma'atti I p161
Performance comparison of integrated continuous-time integrators containing matched MOS transistors. Z. Czarnul G p203

TRANSMISSION AND DISTRIBUTION PLANT

Application of wooden poles for distribution lines. W.C. Sayer C p425
Comparing distribution practices. C.S. Parmenter C p389
Comparison of generating and transmission systems for an offshore array of vertical-axis wind turbines. E. Vaahedi and R. Barnes C p237
Economic design of a 50 kVA distribution transformer. Part 1: The use of liquids of low flammability. D.F. Binns, A.B. Crompton and A. Jaberansari C p445
Economic design of a 50 kVA distribution transformer. Part 2: Effect of different core steels and loss capitalisations. D.F. Binns, A.B. Crompton and A. Jaberansari C p451
French distribution systems: basic features and practices. R. Tellier and G. Gallet C p377
Hong Kong mass transit railway power supply system. P. Lawton and F.J. Murphy C p462
Method of protecting distribution transformers connected solidly to an urban 11 kV network. T.M. White C p441
Modelling of substation grounding grids. A. El-Morshedy, A.G. Zeitoun and M.M. Ghourab C p287
New approach to ultra-high-speed phase selection in single-pole autoreclosure schemes. A.T. Johns and M.M. El-Din Mahmoud C p188
RF power injected into the DC yard by an HVDC convertor pole. R.V. DeVore and E.P. Bohley C e80

TRANSMISSION LINES

Fundamental aspects of fault location algorithms used in distance protection. V. Cook C p359
A frequency-dependent transmission line model for electromagnetic transient studies. S.R. Naidu and F.N. de Lima C e66
Asymmetrical coupled coplanar-type transmission lines with anisotropic substrates. T. Kitazawa, Y. Hayashi and R. Mittra H p265
Correlations of wave variables in a passive network. R.E. Bogner and B.R. Davis G p165
Direct synthesis of the matched symmetric five-port junction from its scattering matrix. S.K. Judah and M.D. Judd H p95
Dyadic Green's function for microstrip-like transmission lines on a large class of anisotropic substrates. R. Marques and M. Horno H p450
Generalised characteristics for the electric strength of phase-to-phase insulation in EHV overhead transmission lines and substations. G.N. Aleksandrov and Yu.A. Gerasimov A p543
Ineffectiveness of transmission line transpositions at harmonic frequencies. J. Arrillaga, E. Acha, T.J. Densem and P.S. Bodger C p99
Measurements of permittivity by the use of surface waves in open and closed structures. A. Marincic, F.A. Benson and J.M. Tealby H p441
Rapidly converging expressions of dyadic Green's functions for parallel-plate transmission line. M. Bressan H p503
Transient calculation of a transmission line using superposition law. H. Nakanishi and A. Ametani C p263

TURBOGENERATORS

Computation and validation against measurements of stator end-region fields in synchronous generators. A.G. Jack and B.C. Mecrow C p26
How HVDC schemes can excite torsional oscillations in turbo-alternator shafts. R. Yacamini C p301
Measurements of the currents flowing in the stator frame of a 500 MW turbogenerator. R.A. Hilliar, R.J. Jackson, D.A. Ward and R.B. Bennett C p16
Rotor winding short detection. J.W. Wood and R.T. Hindmarch B p181

ULTRASONICS

An electronic Doppler signal generator for assessing continuous-wave ultrasonic Doppler flowmeters. R.H. Smallwood and P. Dixon A p104

VEHICLES AND TRANSPORTATION

Automotive electronics. M.H. Westbrook A p241
Drive system design philosophy for mass minimisation of battery-powered vehicles. H.R. van Niekerk B p49 B e154
High-efficiency on-board battery charger with transformer isolation, sinusoidal input current and maximum power factor. J.Ch. Bendien, G. Fregien and J.D. van Wyk B p197
Optimised microelectronic power control of an AC drive for an electric vehicle. W.K. Loh and A.C. Renfrew B p291

VERY LARGE SCALE INTEGRATION

Behavioural description and VLSI verification. G.J. Milne E p127 I p87
Cell-based design: a review. J. Fox E p117 I p77
Design and verification of regular synchronous circuits. M. Sheeran E p295
Design of a reliable and self-testing VLSI datapath using residue coding techniques. I.L. Sayers, D.J. Kinniment and E.G. Chester E p169 I p129
Editorial: Systems on silicon. A.P. Dorey E p105 I p65
Evaluation of an nMOS VLSI array for an adaptive liquid-crystal spatial light modulator. I. Underwood, D.G. Vass and R.M. Sillitto J p77
Low-power integrable paging receiver architecture. C.B. Marshall F p449
Novel dynamic random access memory cell using three diodes. Y.C. Jeung I p61
Partitioned array for stable matrix triangularisation. L. Ciminiera, A. Serra and A. Valenzano E p45
Recursive addition and its parameterisation in VLSI. H.C. Yung and C.R. Allen G p256
Role for optical signal and image processing in the VLSI era. J.B.G. Roberts J p2
SCAPE: a single-chip array processing element for signal and image processing. R.M. Lea E p145 I p105
Silicon-on-insulator technology. S.L. Partridge E p106 I p66
Structured approaches to design. B.J Darby and D.W.R. Orton E p123 I p83
VLSI and WSI associative string processors for structured data processing. R.M. Lea E p153 I p113

WAVEGUIDES AND WAVEGUIDE COMPONENTS

A new technique for absolute temperature compensation of tunable resonant cavities. S.A. Adeniran H e18
Accurate analysis of latching phase shifters. W. Hauth H p165
Analysis of electromagnetic systems by means of Fourier transform techniques. R. Chicon, E. Martin and A. Navarro H p248
Characterisation of proton-exchange slab optical waveguides in X-cut $LiNbO_3$. K.K. Wong, A.C.G. Nutt, D.F. Clark, J. Winfield, P.J.R. Laybourn and R.M. De La Rue J p113
Dielectric and permeability effects in HE_{111} open demagnetised ferrite resonators. J. Helszajn and J. Sharp H p271
Dielectric-fibre surface waveguides for optical frequencies. K.C. Kao and G.A. Hockham J p191
Effect of boundaries on the space charge potential in coup'ed cavity travelling wave tubes. V. Srivastava and R.G. Carter I p185
Effect of the metallisation thickness and mounting grooves on the propagation characteristics and bandwidth of finlines. R. Vahldieck and W.J.R. Hoefer H p315
Finite element analysis of *H*-plane rectangular waveguide problems. J.P. Webb and S. Parihar H p91
H_{11} circular waveguide mode and back scattering cross-section along the axis of a thin walled tubular cylinder of finite length. H.-M. Lee, G.P. Chung, D. Geller and B. Haklay H p77
Interference effects between modes of planar optical waveguides. N. Noursharqh and E.M. Starr J p303
Measurements of permittivity by the use of surface waves in open and closed structures. A. Marincic, F.A. Benson and J.M. Tealby H p441
Metal-insert filters with improved characteristics. J. Bornemann and F. Arndt H p103
Modal S-matrix method for the optimum design of inductively direct-coupled cavity filters. F. Arndt, J. Bornemann, D. Heckmann, C. Piontek, H. Semmerow and H. Schueler H p341
Plasma deposition of GeO_2/SiO_2 and Si_3N_4 waveguides for integrated optics. N. Noursharqh, E.M. Starr and J.S. McCormack J p264
Propagation in a doubly periodic dielectric guide. S.L. Arambepola and J.R. Cozens J p332
Quasistatic characteristics of a coplanar waveguide with thick metal coating. T. Kitazawa and Y. Hayashi H p18
Reradiation from a grating coupler for a grounded dielectric slab waveguide. W.S. Park and S.R. Seshadri H p10
Stopband optimised *E*-plane filters with multiple metal inserts of variable number per coupling element. F. Arndt, D. Heckmann, H. Semmerow, J. Bornemann and R. Vahldieck H p169
Tapering of single-mode optical fibres. A.C. Boucouvalas and G. Georgiou J p385
Threshold current analysis of InGaAsP–InP ridge-waveguide lasers. M.-C. Amann and B. Stegmüller J p341
Variable-length cylindrical post in a rectangular waveguide. A.G. Williamson H p1

WIND POWER

A statistical method for optimising wind power contribution in a diesel supplied network. A.J. Tsitsovits and L.L. Freris C e66
Comparison of generating and transmission systems for an offshore array of vertical-axis wind turbines. E. Vaahedi and R. Barnes C p237
Wind-driven self-excited pole-changing induction generators. N. Ammasaigounden, M. Subbiah and M.R. Krishnamurthy B p315

Book reviews

Advances in electronics and electron physics, supplement 16: The beginnings of electron microscopy. P.W. Hawkes (Ed.) **A** p374
Applications of analog integrated circuits S. Soclof **G** p119
Applied solid-state science supplement 2: Silicon integrated circuits. Part C D. Kahng (Ed) **I** p151
CAD of concurrent computers P.W. Foulk **E** p352
Comparative models for electrical load forecasting. D.W. Bunn and E.D. Farmer (Eds.) **D** p143
Computer modelling in electrostatics. D. McAllister, J.R. Smith and N.J. Diserens **A** p327
Control system principles and design. E.O. Doebelin **D** p110
Doppler radar and weather observations. R.G. Doviak and D.S. Zrnić **F** p209
Fundamentals of micro-optics K. Iga, Y. Kokubun and M. Oikawa **J** p339
Infrared optical materials and their antireflection coating J.A. Savage **J** p162
Interferometry and synthesis in radio astronomy A.R. Thompson, J.M. Moran and G.W. Swenson Jr **F** p648
Methods and materials in microelectronic technology J. Bargon (Ed) **I** p63
Microcircuit engineering '84 A. Heuberger and H. Beneking (Eds) **I** p175
Microcomputers and marketing decisions. L.A. Williams **A** p310
Microprocessors in instrumentation and control S.A. Money **E** p351
Monopulse principles and techniques S.M. Sherman **F** p475
Networks of power electrification in Western society (1880–1930) Thomas P. Hughes **C** p25
Nuclear power and public responsibility. L.E.J. Roberts **A** p44
Optical bistability, controlling light with light H.M. Gibbs **J** p306
Optical materials: an introduction to selection and applications S. Musikant **J** p134
Optimal control. Frank L. Lewis p000 **D** p320
Picosecond optoelectronic devices C.H. Lee (Ed) **I** p168
Practical digital electronics P. Pellosa **E** p351
Principles of optical disc systems G. Bouwhuis, J. Braat, A. Huijser, J. Pasman, G. Van Rosmalen and K. Schouhamer Immink **J** p307
Process dynamics estimation and control. A. Johnson **D** p319
Properties of amorphous silicon EMIS Datareviews Series 1 **I** p54
Quick reference manual for silicon integrated circuit technology W.E. Beadle, J.C.C.. Tsai and R.D. Plummer (Eds) **I** p28
Recursive estimation and control for stochastic systems. Han-Fu Chen: **D** p41
Short-circuit currents in three-phase systems R. Roeper **C** p292
Sound and structural vibration, radiation, transmission and response. F. Fahy **A** p88
Space remote sensing systems — an introduction H.S. Chen **F** p481
Spherical harmonics and tensors for classical field theory. M.N. Jones **A** p108
Spread-spectrum systems (2nd edn.). R.C. Dixon **F** p128
Target adaptive matched illumination radar: principles and applications D.T. Gjessing **F** p581
The design and analysis of VLSI circuits L.A. Glasser and D.W. Dobberpuhl **I** p180
The noise handoook. W. Tempest (Ed.) p. 360 **A** p360
Thin-film optical filters H.A. MacLeod **J** p376
Transucers in measurement and control. Prof. P.H.Sydenham **A** p108
VLSI electronics: microstructure science. Volume 12: silicon materials N.G. Einspruch and H. Huff (Eds) **I** p176

Conference reports

7th international symposium on computer hardware description languages F.K. Hanna **E** p349
15th IEEE international symposium on muliplied-value logic S.L. Hurst **E** p348
1986 American control conference M.J. Grimble **D** p317
From new technologies to profitable products S.L.H. Clarke, D.E. Hooper, J. Clement-Jones and G.N. Taylor **A** p71
Measurements for telecommunication transmission systems—MTTS 85 **F** p314
Neural networks for computing P.M. Grant **F** p487
Radar 85 C. Pell and J. Schoenenberger **F** p212
Twin-channel digital TV sound for terrestrial broadcasting (IEE colloquium report) **F** p313

Conference publications

254 Electrical machines — design and applications **B** p47
261 Developments in distribution switch gear **C** p298
266 Power system monitoring and control **C** p299
270 Second International Conference on Power cables and accessories 10 kV to 180 kV **C** p429
Communications — an industry on the move (IEE Conference Publication 262) **F** p442
IEE Conference Publication 263: Advanced infrared detectors and systems **J** p348
Image processing and its applications (IEE Conference Publication 265) **F** p533
International Conference on electric and magnetic fields in medicine and biology (IEE Conference Publication 257) p. 522 **A** p522
Measurements for telecommunication transmission systems (IEE Conference Publication 256) **F** p441
Secure communication systems (IEE Conference Publication 269) **F** p603
Software engineering for telecommunication switching systems (IEE Conference Publication 259) **F** p525
Speech input/output: techniques and applications (IEE Conference Publication 258) **F** p502